The Refrigeration Service Engineer

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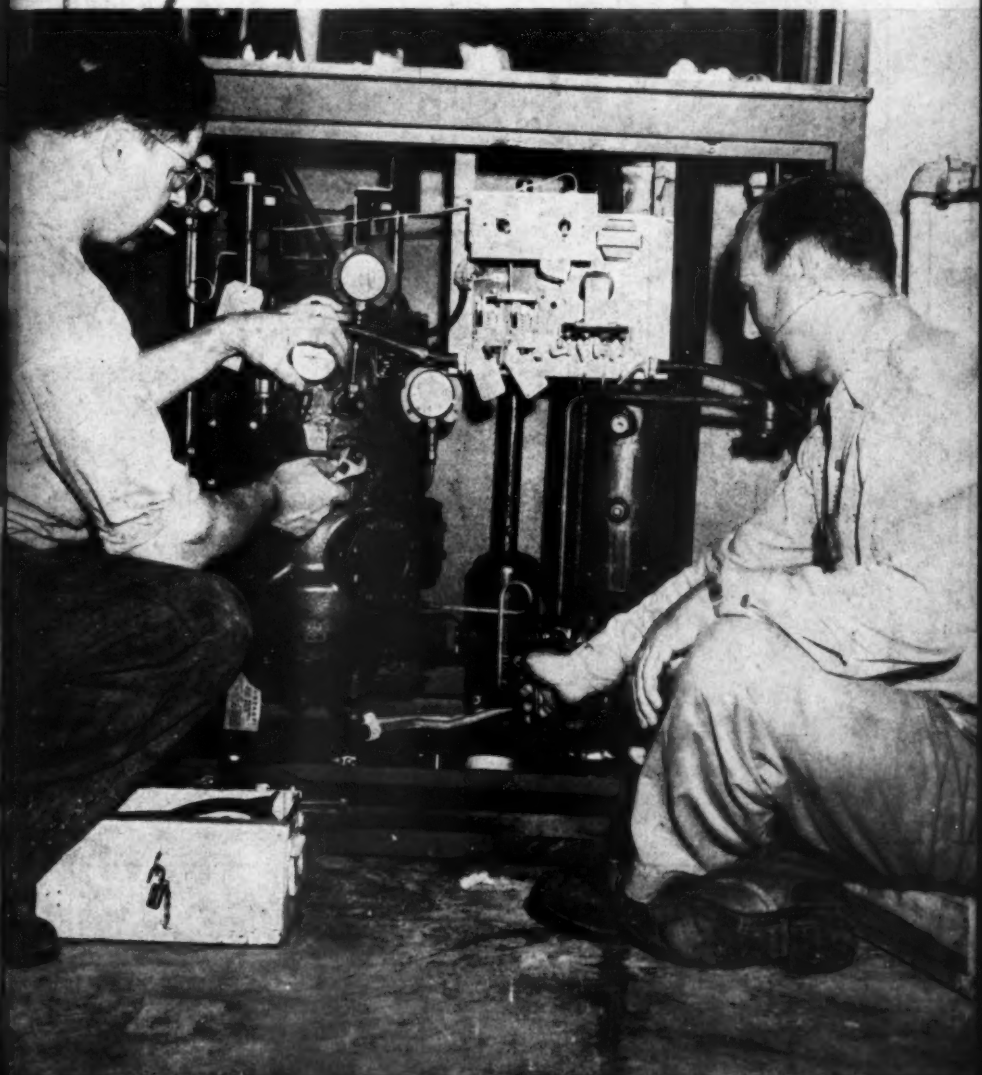
DETROIT

TECHNOLOGY DEPT.

VOL. 14 NO. 9 ★ ★ ★ SEPTEMBER · 1946



25 NEW CHICAGO SEALS

+16 NEW CHICAGO VALVE PLATES

TOTAL 41 NEW MODELS

★

See them at the show in Cleveland Booth No. 502

PERFECT BALANCE

Chicago Seals
MODERN DESIGN

For better performance use

CHICAGO VALVE PLATES and CHICAGO SEALS

CHICAGO SEAL CO. 20 N. WACKER DR., CHICAGO 6, ILL.

THE REFRIGERATION SERVICE ENGINEER, Nickerson & Collins Co., Publishers. 435 N. Waller Ave., Chicago 44, Ill. Published monthly. Vol. 14, No. 9, September, 1946. Entered as second class matter March 4, 1938, Chicago, Ill., under the Act of March 3, 1879. Subscription in the United States, $2.00 per year; all other countries, $3.00 per year.

The Ansul Research Staff
REPORTS ON:

SLUDGES

Approximately 90% of the sludges produced in refrigerating systems are due to moisture. The exact cause can always be determined by analysis, but the appearance of the sludge (see photos) is usually indicative of the cause.

SLUDGE DERIVED FROM MOISTURE— If water is present in a machine, the nature of the sludge depends upon the type of refrigerant and length of time the water is present. All refrigerants ... sulfur dioxide, methyl chloride, Carrene and "Freon-12" ... react with water to produce corrosion products characteristic of each. To prevent sludge, the amount of water present in a refrigerating system must be small enough to avoid ice separation and corrosion. For "Freon-12" and methyl chloride, a quantity of water approximately .05% by weight will cause corrosion; the limit is somewhat higher for sulfur dioxide.

GRANULAR SLUDGE
... due to moisture

SLUDGE DERIVED FROM OILS— Oil sludges are characterized by total or partial solubility in carbon tetrachloride, gasoline and similar solvents. It is generally presumed that oil sludges are due to two causes: (1) an interaction between the unsaturated constituents of the oil and the refrigerant; (2) a breakdown of the oil due to heat, oxidation, friction, etc.

FLUID SLUDGE
... due to oil

HARD SLUDGE
.. due to moisture and oil

SEND FOR "SLUDGES" by Ansul Research Staff
A detailed analysis of the refrigeration sludge problem.

ANSUL WHOLESALERS are ready and equipped to render an intelligent, cooperative service to refrigeration engineers and maintenance men on problems which arise from time-to-time in the operation of refrigerating systems.

FOR EXAMPLE:
The Ansul Research staff has developed a method for analysis of sludges. This analysis usually gives the answer as to the origin of the sludge. If you have a sludge problem, send a sample of the sludge with pertinent information to the Ansul Research Laboratory through your Ansul wholesaler. An analysis report will be made for you without charge.

Ansul Refrigerants are available at leading wholesalers everywhere.

*REG. U. S. PAT. OFF.

ANSUL CHEMICAL COMPANY
REFRIGERATION DIVISION, MARINETTE, WISCONSIN
DISTRIBUTORS FOR KINETIC'S "FREON-11" "FREON-12" "FREON-21" "FREON-22" AND "FREON-113"

POWERFUL QUIET DURABLE

"DETROIT" SOLENOID VALVES

Designed expressly for refrigeration and air conditioning work, "Detroit" Solenoid Valves are the result of many years' experience with such valves.

No. 681—The No. 681 is of the pilot operated type and requires a minimum pressure drop of 1 psi to operate the piston.

Nominal capacity—liquid line
7½ tons Freon-12
17 tons Methyl
½" female N.P.T. connections

No. 683-3—This reliable valve, like all "Detroit" Solenoids is designed for use with any fluid that will not attack brass. Furnished with these sizes of orifices, ⅛", 3/16", and 7/32".

Nominal capacity—liquid line

⅛" orifice	1½ tons Freon-12	2¾ tons Methyl
3/16" orifice	3 tons Freon-12	6½ tons Methyl
7/32" orifice	3¾ tons Freon-12	8¾ tons Methyl

⅜" female N.P.T. connections.

POWERFUL They will lift against high pressures.

QUIET Design of plunger and guide tube minimizes objectionable a-c hum.

DURABLE Moistureproof coils, bodies of non-porous cast brass, long wearing needles and seats give this valve exceptionally long life.

EASILY INSTALLED Substantial mounting boss on valve body provides means for easy rigid installation.

EASILY SERVICED Easily disassembled and cleaned without disconnecting refrigerant lines or wiring.

POSITIVE CLOSING Non-magnetic needle and seat and

⅞" orifice 3¾ tons Freon-12 8¾ tons Methyl
⅜" female N.P.T. connections.

No. 686—The No. 686 is a heavy duty, large capacity pilot operated valve which requires a pressure drop of 1¾ psi to operate the piston when used with refrigerants, 5 psi on water. It is made with 2 sizes of orifice, ½" and ⅝".

Nominal capacity—liquid line
½" orifice 11 tons Freon-12 23 tons Methyl
⅝" orifice 17 tons Freon-12 34 tons Methyl

POSITIVE CLOSING Non-magnetic needle and seat and strong "kick off" spring assure tight closing.

ECONOMICAL Low current demand—replacement parts if required are inexpensive.

FOUR WIRE COIL A four lead coil is available on any "Detroit" Solenoid Valve, for either 115 or 230 volt current according to the way connections are made.

"DETROIT"

No. 647 STRAINER—For any Threaded Solenoid Valve.
Fine mesh strainer of Monel metal to resist corrosion. Slips into adapter tube, and is held in place by tubing and hex nut. Adapter tubes furnished with three sizes of connections to valve, and six sizes of tubing connections:
Adapters with ¼" or ⅜" SAE tubing connections are available with ⅜" MPT Valve connections
Adapters with ½" or ⅝" SAE tubing connections are available with ½" MPT Valve connections
Adapters with ⅝" or ¾" SAE tubing connections are available with ¾" Valve connections
Cleaning or replacing strainer element very easy—just unscrew the hex nut.

DETROIT LUBRICATOR COMPANY

DETROIT

General Offices 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN
Division of American Radiator & Standard Sanitary Corporation

Canadian Representatives: RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

AN *Extension* OF *Sizes* —

NOW INCLUDED IN OUR LINE OF TRIPL-SEAL DIAPHRAGM VALVES

These valves incorporate all the advantageous features of our famous TRIPL-SEAL Diaphragm Valves.

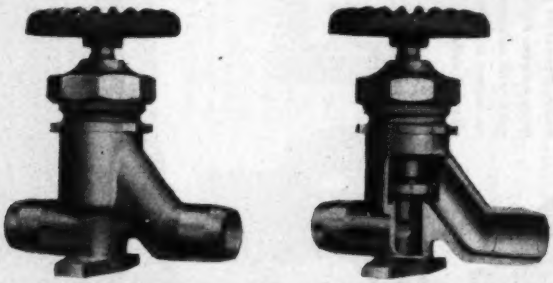
The multiple diaphragm, which has a greatly increased area, is never deflected past its normal center; thus giving it greater service life.

The stem of the TRIPL-SEAL Valve is provided with a sixty degree bevel, thus procuring the most desirable wedging action for positive and easy closing. It is manufactured from Tuf-Stuf, a strong, corrosion-resistant alloy.

The body and cap of the Valve are of forged brass to eliminate seepage and to withstand frost action.

Valves are furnished in a wide range of styles and sizes.

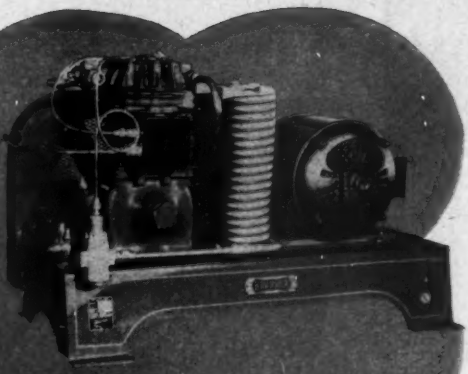
Order from your jobber.



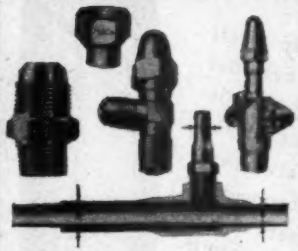
MUELLER BRASS CO.
PORT HURON, MICHIGAN

BRUNNER

USES
MUELLER BRASS CO.
PARTS IN THEIR
CONDENSING
UNITS



BRUNNER MANUFACTURING COMPANY
General Offices and Factory: Utica 1, New York



Illustrated above on this page, are some of the valves and fittings manufactured by the Mueller Brass Co. of Port Huron, Michigan, that are used in the Condensing Unit shown above.

We, at Mueller Brass Co. are proud of our contributions to the dependability and operating efficiency of Brunner Condensing Units.

BUILT-IN QUALITY • TIME-TESTED PERFORMANCE

Mueller Brass Co. Valves, Fittings and Accessories for mechanical refrigeration have a well-earned reputation for built-in quality and time-tested performance. They are manufactured specifically for mechanical refrigeration work. THEY ARE USED BY ALL OF THE LARGEST MANUFACTURERS THROUGHOUT THE UNITED STATES. Mueller Brass Co. products must be good!

THESE PRODUCTS

MUST BE GOOD!

No name in refrigeration is more highly respected than Brunner. In fact, the name Brunner on a condensing unit is symbolic of the highest standards of manufacture measured in terms of materials used, precision assembly and technical developments. For example, valves, coils, bearings and other fittings are of brass or bronze—nothing short of the finest metal for any specific part would do. This accounts for the additional fact that Brunner maintenance and replacement parts costs are negligible—that Brunner units render continuous service at full ratings for many, many years.

MUELLER BRASS CO.
PORT HURON MICHIGAN

WATCHDOG
This tiny cone strainer, measuring only 1½ inches, protects the cleanliness of *"EXTRA DRY ESOTOO" and *"V-METH-L" as faithfully as a mastiff guards his master's property.
If rough handling should ever chip small metal particles from the interior cylinder wall, this strainer, the watchdog of cleanliness, keeps this foreign matter out of the system—prevents injury to the valve seat. It is just one of the extra little things that combine to give you service surety when you use VIRGINIA REFRIGERANTS
*VIRGINIA'S brand names for high purity Liquid Sulfur Dioxide and Methyl Chloride.
Distributors of "Freon" Refrigerants 11, 12, 21, 22 and 113
VIRGINIA
VIRGINIA
SMELTING COMPANY
WEST NORFOLK, VIRGINIA
NEW YORK • BOSTON • DETROIT

ASIER AND EASIER FLAKING BECAUSE IT'S

Self-Clamping

IMPERIAL NO. 295-FS FLARING TOOL

HERE ARE THE THREE SIMPLE STEPS IN MAKING A FLARE . . . . . .

1 Spread bar and insert tubing in proper opening.

2 Close bar and slide yoke over hinged end of bar.

3 Center spreader cone over tubing and turn compressor screw down firmly. The result—a perfect 45° flare.

With the new Imperial Self-Clamping Flaring Tool you merely insert tubing, slide self-clamping yoke over the wedge-shaped bar and flare. What could be more simple?

No nuts, levers or other devices to be tightened , , , the wedging action of the forged steel yoke takes care of all that by holding the tubing tightly in the bar for a quick flaring job. You cannot find a more convenient, speedier tool for making 45° flares for SAE flared joints than this Imperial Self-Clamping Tool.

No. 295-FS Imperial Self-Clamping Flaring Tool for 1/4", 5/16", 3/8", 1/2", and 5/8" outside diameter tubing. Price each $4.50

See Your Jobber

THE IMPERIAL BRASS MFG. CO.
534 S. Racine Ave., Chicago 7, Ill.

IMPERIAL

Fittings • Valves • Dehydrators • Filters • Floats • Charging Lines
Tools for Cutting, Flaring, Bending, Coiling, Pinch-Off and Swedging

READY NOW!

NEW STAINLESS STEEL LONG-LIFE CONSTRUCTION

COMPLETELY NEW IN DESIGN

The water cooling and storage shell of the new Temprite direct expansion water cooler is constructed entirely *of 18-8 stainless steel.* All seams are atomic-hydrogen welded to insure strong, corrosion-free joints at all points coming in contact with water. Copper refrigeration coil is hot-tin bonded to the stainless-steel water shell, insuring maximum heat transfer.

Cooler can be operated with an automatic expansion valve, high-side float or a capillary tube and does not require an oil separator or equalizer tank. Easily adaptable to either new or rebuilt self-contained water coolers, dry-storage type beverage cabinets, small size restaurant installations, soda fountains requiring additional capacity or fruit drink dispensing cabinets. Competitively priced, this efficient, high capacity water cooler low-side is available for immediate shipment.

Specifications and prices available on request.

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous 80° 40° *Liquid Cooling Devices*

45 PIQUETTE AVENUE DETROIT 2, MICHIGAN

Balanced Performance

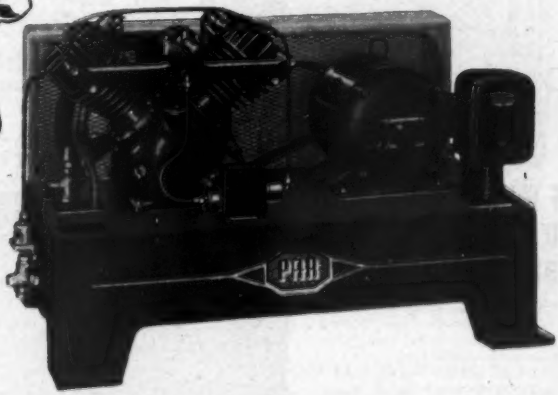
Compare PAR from Every Angle

CONSTRUCTION
PERFORMANCE
SERVICE

You'll quickly see WHY that... by Comparison, they're buying PAR

PAR BY Lynch

COMPARE Par from every angle—*Construction* . . . streamlined, rugged, with many outstanding features, makes servicing a simple easy task—*Performance* . . . quiet, slow speed, assures extra years of dependable efficient operation—*Service* . . . Par jobbers located in important trading centers from coast to coast offer complete Par service. See your Par Jobber today or write for Par Catalog R-97 and *compare!*



PAR—Condensing Unit Line sold exclusively through Franchised Refrigeration Equipment Wholesalers!

. . . By Comparison — You'll Buy PAR

Lynch Manufacturing Corporation

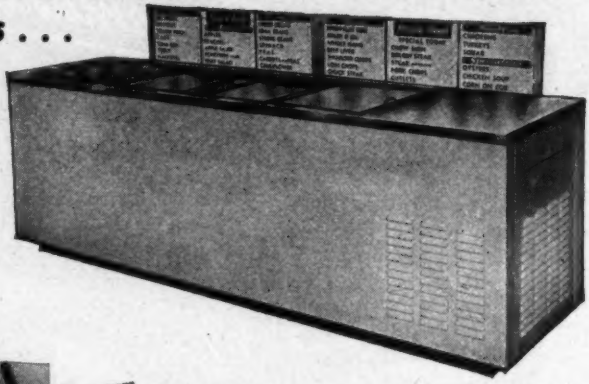
General Offices, Toledo 1 • Factory, Defiance, Ohio, U.S.A.

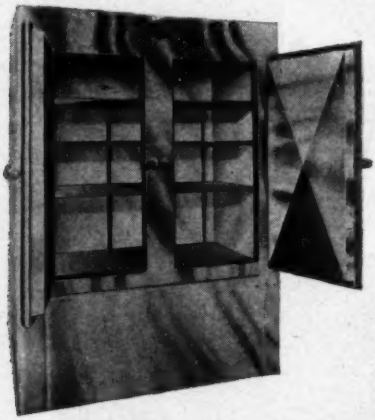
• FOR IMMEDIATE DELIVERY •

QUALITY FRIGITEMP GLASS TOP FREEZER CABINET

for Frozen Foods . . .

20 cu. ft. . . . sliding glass top. 20 Gauge inner and outer shell welded . . . shells separated by wood breaker frame. 4" insulation sides; 5" bottom. Finished in glossy white lacquer. Top covered with 18-8 stainless steel. Self-contained or remote units.





◀ DELUXE FRIGITEMP

Stainless Steel REACH-IN BOXES

Stainless Steel interior, Polished Stainless Steel exterior . . . door corners rounded. Overhead heavy-duty blower coil allows full, clear depth storage space. Adjustable wire shelves.

Model	Cu. Ft.	Width	Depth	Hght.	Doors
SR1-20S.C.	...20	50"	25"	68"	2 Blower
SR1-29S.C.	...29	52½"	29⅛"	74"	2 Blower
S.R.C.-42 (Remote)	42	53"	30"	74"	4 Blower
S.R.1-16S.C.	..16	45"	22"	67"	2—Cu. Maker
SC.C20	20	50"	25"	68"	2—Cu. Maker

FRIGITEMP ▶ DRY BEVERAGE BOTTLE COOLERS

Copper bearing galvanized interior . . . 4 adjustable, rust-resistant wire partitions. Utility shelf. Corners metal-rounded; doors, rails highly polished stainless steel. Black, baked crinkle finish. Heavy duty refrigeration blower. Insulated 3" fibre glass or equivalent.

Mod.	Lgth.	Dpth.	Hght.	Bins	Cap.
B75	75"	28"	39"	5	*23cs.
B98	98"	28"	39"	6	*33cs.

*12 oz. Pepsi-Cola Bottles.
REMOTE (Less Compressor) Blower Built In.

● Also Ice Cream Cabinets, Upright and Closed type Freezers, Stainless Steel Bottle Coolers, Direct Draw Dispensers, etc.

FRIGITEMP CORP. 931 Bergen St., Brooklyn 16, N. Y., Main 2-9093-4

WHEN YOU NEED QUICK SERVICE...

DEPEND ON Kelvinator!

COMPLETE STOCKS OF REFRIGERATION PARTS AND SUPPLIES

Conveniently Warehoused

Competitively Priced

Progressive service organizations realize that Kelvinator's 30 parts depots — strategically located throughout the country—are one big factor which can contribute to quick service. Kelvinator's depots have a complete stock of the refrigeration parts and supplies you need . . . available when you need them—and competitively priced. Wherever you are, Kelvinator offers a solution to your supply problem.

NASH-KELVINATOR CORPORATION, Detroit.

KELVINATOR OFFERS VALUABLE HELP FOR YOUR SERVICE TRAINING PROGRAM

For training additional personnel, refrigeration service organizations will welcome the aid of Kelvinator's valuable training material. One of these useful training helps, illustrated above, is the *"Trouble Shooter's Guide for Refrigerator Service Men"* . . . a handy pocket-sized ready-reference answer to many service problems. Ask your Kelvinator Distributor or Zone Office.

Kelvinator

CONDENSING UNITS

REFRIGERATION PARTS

AND SUPPLIES

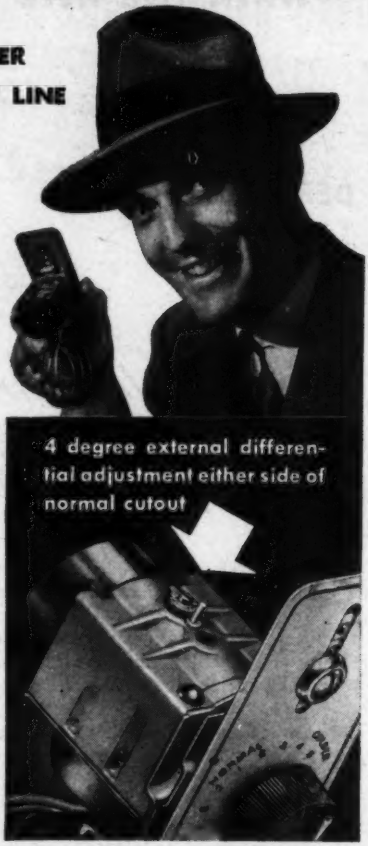
BUY KELVINATOR FOR ALL YOUR REFRIGERATION REQUIREMENTS

ALL NEEDED CONTROLS

FOUND IN THE CUTLER-HAMMER REFRIGERATION REPLACEMENT LINE

Sixty percent of all refrigeration control replacement requirements are met by one Cutler-Hammer control alone . . . the *Universal* Replacement Unit. And where specific control is needed, that need is met by Exact Replacement control items in the C-H line, each individually packed, clearly labelled, complete with dial plate mounting screws, trim washers and full instructions for mounting and adjustment.

The practical advantages gained are: less capital tied up in stock; rapid and regular turnover; speedier completion of each job; greater all-round satisfaction. And in each C-H Replacement unit you will find the results of a 50-year specialization that had led to acknowledged leadership in the control field. Thus, outstanding refrigeration wholesalers recommend C-H Replacement Control and alert service organizations everywhere feature and use it. CUTLER-HAMMER, Inc., 1363 St. Paul Ave., Milwaukee 1, Wisconsin.



Bul. 9521N9▶

THIS ONE UNIVERSAL UNIT ALONE COVERS 60% OF ALL NEEDS

Adjustable Mounting Brackets

Maximum Mounting Centers 4-3/16
Minimum Mounting Centers 2-3/16

Adjustable Cutout Feature—Differential can be increased 4 degrees by turning indicator in "Hi" direction and decreased 4 degrees by turning in "Lo" direction.

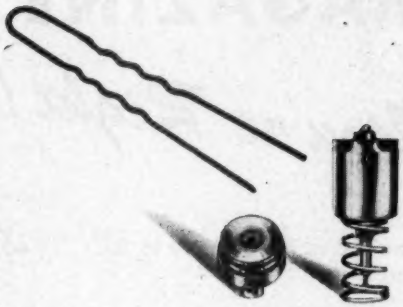
Adjustable Range—Turning screw clockwise lowers setting and counter-clockwise raises settings.

Operating knob can be adjusted to meet various evaporator scale settings. New knob is ideal for varying shield thicknesses. Makes this control adaptable to wider range of single dial replacement jobs where overload is not required in unit.

Visit our booth No. 304-306, Refrigeration and Air Conditioning Exposition, Cleveland Public Auditorium, October 29-November 1

CUTLER-HAMMER
MOTOR CONTROL
C-H

DOMESTIC, SEMI-COMMERCIAL AND COMMERCIAL CONTROL



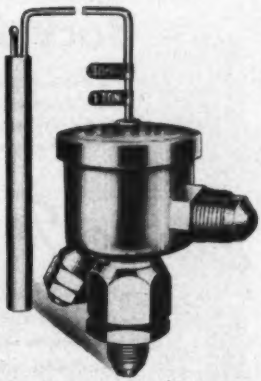
INTERCHANGEABLE

THE NEW ALCO THERMO-LIMIT VALVE

20 combinations of capacity and pressure-limit—all in one compact control! Both cage assembly and pressure-limiting cartridge are quickly interchangeable in the field. That means fewer valves to carry in stock and to the job—a big saving in time and trouble.

The ALCO THERMO-LIMIT VALVE is a "safety" valve that limits pressure to prevent motor overload. It is liquid charged for positive control in any location and position.

Available at your wholesaler's for smaller capacity commercial refrigeration. Ask for our Bulletin 152.



ALCO

ALCO VALVE CO.

857 KINGSLAND AVE. • ST. LOUIS 5, MO.

Designers and Manufacturers of Thermostatic Expansion Valves; Pressure Regulating Valves; Solenoid Valves; Float Valves; Float Switches.

THE EDITOR *of* THIS MAGAZINE

says

"Elpeco You're Right!"

In a special bulletin mailed to the Industry in *JULY, 1946,* this is what he says: —

"The Refrigeration Service Man is a businessman today. The Refrigeration Service Engineer is a highly respected representative of the entire refrigeration industry in his community. He is an established businessman."

But **Look What We Said Back in December, 1945!**

"The Refrigeration Service Engineer is the backbone, and an actual business creator of the Commercial Refrigeration industry. As such, he has certain basic rights which the manufacturer is morally obligated to protect."

Elpeco Is First!

- **to give full recognition to the Service Engineer.**
- **to provide him with a full line of fine equipment from one source with one responsibility.**
- **to establish and publicize a policy designed to protect and help the Service Engineer.**
- **to channel virtually its entire output through Wholesalers so that Service Engineers cannot only live, but thrive.**

NO WONDER ELPECO IS IN THE SPOTLIGHT

209

ELECTRIC POWER EQUIPMENT CORP.

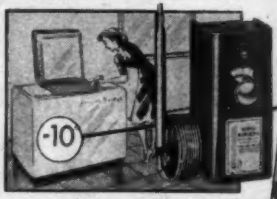
SHUNK STREET, EAST OF FRONT, PHILADELPHIA 48, PA.

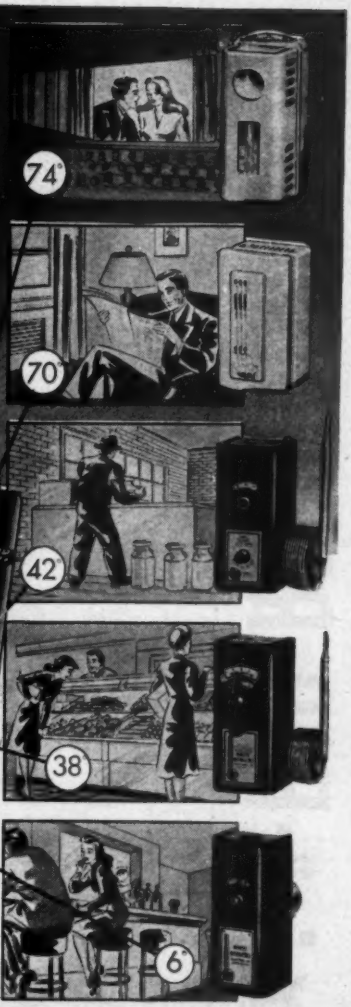
Set it and FORGET IT!

no matter what the temperature application, White-Rodgers controls will take care of it . . .

- easily
- accurately
- dependably

Rely on White-Rodgers temperature or pressure controls to perform exactly as you set them. Except for individual preferences you actually can forget them! Specified as standard by leading manufacturers of air-conditioning and refrigeration equipment, they bring you ease of installation, accurate and completely dependable performance. Write today for refrigeration catalog and installation data.





WHITE-RODGERS ELECTRIC CO.

ST. LOUIS 6, MISSOURI

Controls for Refrigeration • Heating • Air Conditioning

"Artic"-FOR REFRIGERATION

UNIFORM... DRY... 99.5% PURE...

HIGH-PURITY "Artic" Methyl Chloride is designed to meet your every requirement.

ORDER NOW—but don't stock up! It's available as you need it.

RETURN CYLINDERS PROMPTLY! —Help assure yourself and others rapid deliveries! E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DU PONT METHYL CHLORIDE

chemicals Department, Wilmington 98, Delaware.

DU PONT METHYL CHLORIDE SPECIFICATIONS

Purity . . . . . 99.5% Methyl Chloride
Moisture . . . . . 0.008% by wgt. max.
Acid (as HCl) . . . 0.001% by wgt. max.
Residue on Evaporation
0.01% by wgt. max.
Boiling Range(760mm)
−24.6° to—23.6°C.
Color . . . . . water white, clear

DISTRICT SALES OFFICES: Electrochemicals Dept.—Baltimore, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, El Monte, New York, Philadelphia, Pittsburgh, San Francisco; and Ammonia Dept.—New York, Philadelphia, Chicago, St. Louis.

DU PONT ELECTROCHEMICALS

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

PLATE TYPE EVAPORATORS GIVE *GREATER* PAYLOAD SPACE

Kold-Hold plates take up little space, leaving room for a larger payload. Regardless of the type of installation for meat, milk, frozen foods, ice cream, they protect and insure the freshness of the load through the longest trip by holding specified temperatures until the day's end.

Kold-Hold's over a decade of experience in designing, engineering and building refrigeration products to meet specific needs, is your guarantee for complete satisfaction on any truck installation.

Providing a cooler room on wheels, not only saves on spoilage, but also on man hours, as nothing needs to be removed from the trucks at night. With a simple extension from your existing cooling system to the Hold-Over Plates in the truck, you have a cooler room on wheels.

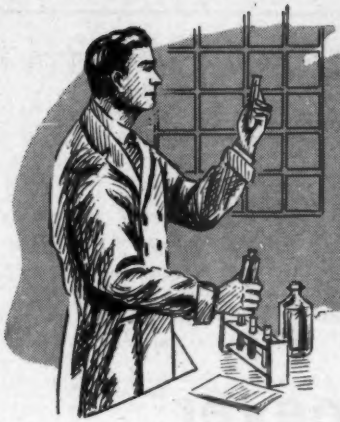
At the same time, Kold-Hold truck refrigeration costs less than ice, and Kold-Hold plates will outlast your truck body — and old plates can easily be adapted to meet the needs of your new equipment.

Write today for full information and a complete catalog.

KOLD-HOLD

KOLD-HOLD MANUFACTURING CO.
502 N. Grand Ave. Lansing 4, Michigan

* ***Attend* REMA** *(Refrigeration Equipment Manufacturers Association Convention will be held in Cleveland Public Auditorium October 28 to October 31). See Kold-Hold equipment at this show in space 414.*



Let's talk about Chemistry!

THAWZONE DATA

That a chemical agent is needed in a refrigerating system is not always immediately apparent to the engineer.

The ideal refrigeration unit would have an inert fluid circulating in a system made up of completely inert parts. This is, of course, impossible to realize in practice. The most carefully installed system contains traces of air, moisture, acids and other impurities.

THAWZONE
PATENTED
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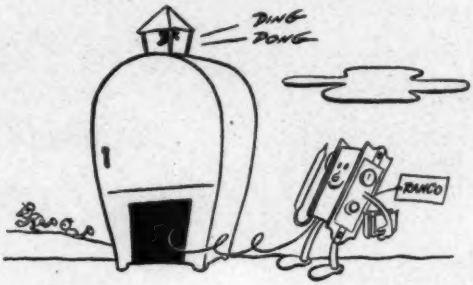

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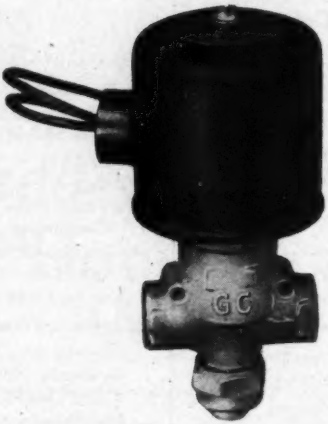

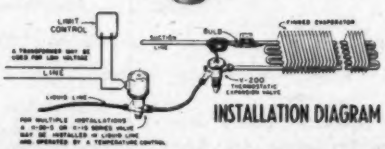

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16-1

IN THIS ISSUE—

According to the author, Martin G. Lane, of the article entitled "Some Aspects of Safety in Service Work" on page 25, the accident record of the refrigeration service business is little better than that of the coal mining industry. The poor record, however, is not due to accidents in handling refrigerants or to explosions caused by excessive pressures as one may think, but to carelessness in performing relatively safe operations. The author makes some definite suggestions aimed at improving the record which will perhaps be useful to employers and their employees.

In his usual smooth flowing, easy to read manner of writing, Waylan Clarke in his column "Getting Down to Business" this month, touches on the subject of keeping accounts, building good will and knowing your business to the extent of eliminating some of the bad guesses. His column appears on page 28.

"Bull Session," by Donald F. Daly, on page 30, is just what the title implies but it is a good story and entertaining reading. You, too, will enjoy it.

For several years now, in fact ever since the advent of air conditioning, we have heard various predictions on what air conditioning would do to the design of our future home. Very little has been done, however, outside of the drawing boards of architects and engineers to actually show us what that future home would look like. The Fritz B. Burns Organization of Los Angeles have taken many of the best ideas and developments and combined them into what might become a pattern for "The future home design for year round air conditioning." A description of it appears on page 32.

The transfer of anesthetics in bulk to small containers can be a dangerous job for the operator where some method of controlling the rising vapors is not provided. Controlling the vapors of some anesthetics is a natural application for refrigeration. The article "Refrigerated Bottling Ethyl Chloride" on page 36, describes one of them.

A retail store on wheels specializing in the sale of frozen foods is a new development of a West Coast manufacturer which gives promise of a new group of small business operations. "Frozen Foods Pantry on Wheels," on page 38, describes some of the expected advantages of this method of merchandising frozen foods.

In the "Questions and Answers," page 40, is an interesting problem on an ammonia system running a consistently high head pressure. The possible methods of correction are also discussed.

Under "Service Pointers," page 43, is a description of one reader's short cut method of cleaning up a stuck-up Frigidaire Meter-Miser without opening the unit. It is a good suggestion and it worked for the writer.

Three more of the wiring diagrams for Majestic units appear on pages 45, 46 and 47. This completes the set of six which covers all the sealed models.

A general description of what you will see at the All-Industry Exposition in Cleveland, Oct. 28-31, appears on page 52. The program of events and other information on the Refrigeration Service Engineers Society Annual Convention in Cleveland Oct. 26-29 appears on page 62.

COVER

THE delicate parts of the "deep water" atom bomb dropped July 25th were protected by the same 12 Chrysler Airtemp "Packaged" Air Conditioners which guarded the earlier Bikini A-bomb. Constant temperature control was vital in the laboratories to insure both the success of the tests and the safety of the technicians. On the front cover, Roy M. Coyle, left, and Richard Fennel are shown installing one of the units.

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Some Aspects of Safety in Service Work

By MARTIN G. LANE

Safer working conditions for the installation and service man is a difficult problem because of the nature of the work and the circumstances under which it is performed. The increasing accident rate, however, indicates that more attention must be paid to this side of the business. The author offers in the following some definite suggestions:

THE applications of refrigeration have increased from some few into more than two hundred essential services in a period of thirty years. These applications have affected the entire field of domestic, commercial and industrial refrigeration.

From the refrigeration plant operator and factory repairman, the service field has expanded into thousands of operators and repairmen and has brought into being a distinct type of repairman who has set up his own shop to repair and install the equipment for the many applications.

This type of repairman has developed from a trainee taken into some one of the several large factories producing refrigerating equipment, where he was given the fundamental principles of refrigeration and enough engineering training to enable him to calculate heat loads, select equipment, install it and keep it in good operating condition during the life of the equipment.

A great number of these pioneer servicemen, encouraged by the expanding field, started a business of their own and these shops today form the original service group. More than seventy-five per cent of the applications of refrigeration today have been suggested by the ingenuity of this group of men. To further improve their quality of service they have joined together into educational organizations for the exchange of information in order that they might become more proficient. Independent service has become an industry in itself.

The growth of this industry has not been without its trials. A continual shifting of personnel has not tended towards a stabilized procedure of operating practice and among other things has tended to cause a very bad safety record for the industry. The startling thing is that little improvement from the safety angle in the industry is being made.

Accident Rate High

According to the National Safety Council the accident rate and the lost time rate is not much better than that of coal mining. The frequency of disabling accidents per million man hours is 44.22 as compared to 50.36 in mining and for machinery in general 11.01. In severity or days lost per one thousand man hours it is 3.95 as compared to 10.52 for mining and for machinery in general only .66. Even the man working in the very diversified chemical industry is 27 times safer than the man in the refrigeration industry.

Surprising as it may seem, accidents in the refrigeration industry, however, are not due to low temperatures or handling of refrigerants, as much as they are due to the handling of materials, boxes of goods, installing of display cases, walk-in coolers, placing of heavy condensing units and unit air conditioners. Many accidents are caused by ordinary tools slipping or being dropped. Almost 70% of the accidents of known occurrence come within this category. The balance of 30% are due to electricity, vapor and hydraulic pressures, to refrigerants themselves and the handling of copper and steel piping or tubing in the installation of equipment. In this category, recklessness rather than ignorance is usually the direct cause. In a few cases an incomplete knowledge of the chemicals involved or the in-

complete knowledge of mechanical principles involved in machinery erection is the cause. Others have come from an incomplete knowledge of test procedure or elements used in testing. For instance, violent explosions have resulted through the use of oxygen in testing the ability of piping arrangement to withstand pressures; severe burns have been received when methyl chloride has been substituted for ammonia in aluminum piping systems; severe burns from testing butane propane and isobutane jobs with halide leak testing devices; asphyxiation from ethyl chloride, nausea from methyl chloride, and severe paralysis of the lungs caused from using a blow torch on receivers from "Freon-12" and methylene chloride installations in which considerable amount of refrigerant was still present in the oil in the receivers. "Freon-12" is the worst offender in this respect. In fact the author has seen bench men knocked out cold when he was indulging in this practice and happened to get his nose over the valve vent hole at the wrong time.

Watch Excess Pressure

Many bad explosions have occurred in ammonia installations where the high pressure control has been blocked out, but the worst explosion the author ever saw was from a combination of oil vapor and methylene chloride, a supposedly harmless refrigerant. Later this refrigerant was replaced with dielene with the reoccurrence of an explosion. This occurred in a theater air conditioning installation of 600 tons capacity. They finally returned to ammonia and indirect cooling. Unfired pressure vessels are as much of a hazard as fired pressure vessels, since many times a false sense of security is assumed. Investigation of blown up sulphur dioxide, methyl chloride, "Freon-12" and ammonia receivers, when the high pressure control had been blocked out and the cooling water lost, bear mute evidence of the terrific forces that are present in refrigerant containers and the resulting damage is sometimes worse than a boiler explosion.

Negligence on the part of owners of equipment lead to many accidents. Frequent overhauls and inspection should be made, and the supports of coils and piping should come in for their share of attention. In one year in one Iowa city of 29,000 people, 105 fires were investigated that originated in the base of domestic refrigerator cabinets and unit air conditioners through neglect to properly clean up over oiling of equipment and cleaning of dust laden condensers.

Refrigeration safety has become very serious and should be viewed with alarm by the industry. Steps should be taken to completely correct it before the public begins to suspect it and shy away from it. It takes many years to overcome such a condition.

According to insurance reports there is a definite increase in the number of accidents in the refrigeration industry, compared to the downward trend in most other industries. If the industry is going to better this situation, then a better system of reporting accidents in the industry must be instituted. When this is accomplished the causes can be more correctly analyzed and preventative measures taken. Education is part of the answer, but it is not all. The bad showing is not all due to the freak accident. Many of them are due to violation of fundamental rules of mechanics and chemistry. There is nothing mysterious about accident prevention. It is not merely a posting of bulletins and the issuing of rules. There is a definite operating problem that must be approached by management or those responsible to management. Increased production, increased profits, efficient shop or field organizations and safety cannot be separated.

Satisfactory personnel or public relations cannot be maintained without a sincere interest in accident prevention. Shop foremen and field supervisors should supplement the management safety program with their own plan for the control of accidents. This will include such activities as come under the following headings:

Engineering Control

1. Analysis of accidents, determination of hazards and causes.
2. Inspection and maintenance of equipment.
3. Job analysis and improved procedure.
4. Review of plans and specifications for new installations.
5. Elimination of hazards through changes in design and layout.
6. Thorough investigation of all accidents and uniformity in reporting them.

Stimulation

1. Personal contact with all employees in order to develop safety consciousness.
2. Special personal supervisory attention to careless employees.

3. Constructive supervision, helpful criticism.

4. Delegation of specific safety responsibility.

5. Accident charts, comparison with other industries.

Education

1. Proper hiring and placement of employees.

2. Instruction in improved methods of construction, installation and operation.

3. Use of specific job instruction, written rules and regulations.

4. Posters, bulletins and displayed warning signs.

5. Short meetings to discuss specific problems and hazards.

6. Shop and field inspection committees and rotation of personnel on these committees.

The shop foreman and field supervisor are responsible for the smooth operation of his department and any interruption to the successful performance of his assigned job is a reflection on his ability. Every foreman is striving for greater efficiency. An accident directly interferes with smooth performance and creates unnecessary operating costs. Accident prevention is therefore an important part of every foreman's regular responsibilities. The losses resulting from accident interruptions should be charged to his department and it is important that he know the extent of the losses, and be capable of making a full and complete report. The average direct insurable loss represented by compensation and medical payments to injured workers has been found to be about one-fifth of the total cost of an industrial accident. The indirect uninsurable losses represent charges that are frequently overlooked by the foreman because of their intangible nature. These hidden and indirect losses include:

Manpower Losses

1. Service of skilled worker.
2. Reduced capacity of skilled worker.
3. Inefficiency of replacement.
4. Training of replacement.
5. Production time taken for first aid.
6. Other workmen distracted at the time of accident.
7. Supervisor's time lost by investigation.

Machine Losses

1. Idleness.
2. Breakage by new employee.
3. Abnormal depreciation.
4. Improper maintenance.
5. Damage at time of accident.

Material Losses

1. Spoilage, by new employee, in process at the time of accident.
2. Substandard quality.
3. Delayed delivery.
4. Reprocessing.

Practically all accidents are caused by a careless act or a failure to act on the part of some person or a group of persons. The result of these acts or omissions may be the injury or the death of one or more persons, damage to machinery, equipment or property and interruption to carefully laid plans, or, a combination of all these results. It is important to remember that an accident does not necessarily involve injury.

Poor tools cause many accidents—inspect them regularly.

Once an unsafe act occurs, it is generally impossible to control the immediate results. In other words, the employee who suffered a scraped shin when he fell from a ladder just happened to be lucky. It is also a matter of luck when a refrigerating condensing unit is shut down one hour instead of five as the result of blocking out a high pressure relief control.

Was the job planned and set up properly?

Were adequate instructions given?

Did the foreman enforce his instructions?

When preparing or administering a job, the foreman must consider working conditions, the working habits of the employee and the enforcement of approved methods of procedure. To effectively avoid the unexpected disabling interruptions to a planned job, the foreman can anticipate and eliminate unsafe conditions and working habits by an application of the following principles:

1. Provision of good working conditions and methods.
2. Careful and thorough inspection.
3. Proper selection and placement of men.

(Continued on page 74)

By WAYLAN CLARKE

LET'S talk about the little boy who gave his teacher a shiny, red apple. He may never have heard about Mr. Carnegie's famous book "How to Win Friends and Influence People" nor was he particularly aware of the obviousness of his approach, but of one thing he was definitely certain — he needed teacher's good will and he was all-out to promote it.

There's another angle to the apple-for-teacher device that should be aired—teacher herself may have realized that the little boy had ulterior motives in presenting the apple to her, but she still felt pleased. After all, the little boy had realized that his scholastic level was not all it could be and he at least tried to do *something* about bettering the situation. (Which is something more than can be said for a good many grown-up refrigeration service shop owners.)

As you may suspect by now, your columnist is about to launch into a straight-from-the-shoulder discussion on promoting good will. Salesmen scoffingly refer to it as "missionary work"; advertising men prefer a more dignified (and consequently more costly) phrase; they call it "institutional advertising." For our purposes, let's call it what it is—building good will among your customers, and your prospects, for *future* business.

Notice that word *future;* for here is the ticklish point of all good will promoting. You and I are business men. We are, strangely enough, interested in making money *today.* Nothing wrong with this philosophy. We wouldn't stay in business long if we weren't interested in getting business today. Let's grant that, but let's not make a fetish of it. If we do, we're short-sighted. Immediate sales are important, of course, but the fellow who stops at this point is like our friend—the grasshopper. This worthy insect lives a happy, *but short,* life because he makes no provision for the future. He is known for his failure to store away something for the slim days when the going is rough.

Unfortunately, too large a percentage of small business men are grasshoppers—fascinated by the daily ring of the cash register, but not in the least bit concerned about the bell going out of order tomorrow. "Advertise," these fellows say, "for immediate sales or service. Make your time and money bring results today, for tomorrow you may die!" It sounds good, doesn't it? But the trouble is tomorrow you don't die and you go through the same struggle every day thereafter.

In previous issues, we've talked a good deal about advertising for immediate business. Our policy hasn't changed. All we ask now is that you consider the importance of devoting additional time and additional money to building good will—building business for tomorrow.

How are you going to go about it? Well, remember that fellow I told you about in a recent issue—the fellow who inserted a display advertisement in his local newspaper during the Christmas Holidays? This man wished all of his customers and prospects a sincere season's greeting and chalked up the whole deal to good will. As I pointed out at the time, he received no direct business from the advertisement, nor for that matter, did he have any way of telling whether or not he received any indirect business as a result of it. But he was *willing* to write off the expenditure against good will. And his willingness was something worth writing about. For it seems that it's one of the most difficult decisions a small business man can make—this decision to spend a little money and a little time on promoting good will. And because most fellows would rather decide against it, they remain *small* business men but can't understand why.

Of course, promoting good will is not simply a matter of running a Christmas Greeting in your local newspaper. It's not simply a matter of advertising. It embraces

far more than this. It concerns taking time (and time to the service shop operator is money) to give a strong handshake and a friendly greeting. It concerns developing a smile—a sincere smile—and staying with it even if you literally "can't stand" the person with whom you are dealing. It even concerns going three blocks out of your way to call on Joe Zilch to ask him how little Johnnie Zilch came out after his operation for adenoids.

Promoting good will takes time—time away from immediate business—and it takes money, too, if you plan a serious, consistent campaign to build good will by mail, by newspaper advertising, or by any other technique that presents itself.

Remember that the smart operator, the fellow who goes places, is the fellow who realizes that he must build his present business *simultaneously*. He's got to use his right hand and his left hand! He can't neglect his promoting of immediate business for building future business, nor can he give all of his attention to the immediate business, alone. Neither must be neglected if he is to make something of himself.

To all of this you may say, "Where am I going to get the time to do all of this? What do you think I am—Superman? How many hours do you think there are in a day—65?"

No, you don't have to be Superman. You can *plan* your day. You can systematize your work—so many hours in the shop—so many hours at your desk—so many hours making the contacts that count. And as you begin to expand, you can specialize—hire other men for the shop work—hire a girl to double on the bookkeeping and the daily flow of letters and telephone calls. That's how you'll grow!

It's a pleasant thought, isn't it—the idea of hiring men and girls—of making your business grow from a basement or garage, spare-time proposition into a shop of your own with you as the "boss."

It's a pleasant thought, all right, but as you've no doubt seen thus far from your own experience, there are a good many things that go into building a successful business—a good many other things that we haven't even touched on yet which nevertheless have to be done. One of them is this matter of keeping the books. If you were a farmer, you might call bookkeeping a "chore." You might even call it a dozen other names—some perhaps unprintable—but come what may, the books must be kept, either by you, your niece, some other relative or friend, or a public accountant whom you'll hire on a once-or-so-a-month basis.

Don't misunderstand. No service shop owner can be expected to balance his books with one hand and wield a flaring tool with the other. As a matter of fact, he's a pretty smart operator if he can keep one book, alone, in proper order and up-to-date.

Perhaps you are already familiar (maybe too familiar) with the book. It has a good number of names—chosen by various bookkeepers to confound and confuse an already confounded and confused subject. Some call it the daily ledger; others, the day book, the original entry record; and some, preferring simplicity and whimsy, the blotter. Into this book *should* go neatly and in logical column postings a complete history of the day's transactions whether they be cash in, cash out, credits, debits, expenses, consignments—oh, the categories are both multifarious and nefarious—depending upon the size and scope of the business. Unfortunately, into this book *do* go such items as the wife's shopping list, notes of telephone numbers, dental and doctor appointments, and various hen scratchings and plain and fancy doodlings which *might* suggest financial transactions.

Here's the point. The day book (lately I've heard this term used most frequently in my locality) and perhaps the stubs from your check book represent the basic records, the original entries, from which at least three other vitally important books are usually developed—the cash book, the journal, and the ledger (more about these in a later issue). And this is the job for the "journeyman" bookkeeper whose services are well worth his price.

He's the fellow who can make your figures make sense and who can give you a clearer picture of what your business is really paying you. But he is not a cryptograph expert and if he is called on to do a major job of decoding your day book, he has every right to raise his fee. So common sense dictates that you keep your basic book in neat order—or at least have some one in your employ who can "double in brass' at this

(Continued on page 58)

Bull Session

By DONALD F. DALY

THE Postman takes a walk on his day off, and that may seem an odd sort of holiday, but consider the average refrigeration mechanic. When he has time to spare nine times out of ten he will head for some place where he can talk refrigeration. I don't know if the SO^2 and ammonia loosens his tongue, or if he just gets wound up from trying to cope with all the problems he has to face. But, whatever the cause, most of them prefer talking shop to any other form of recreation.

I am no exception to this rule and the other day when I found myself with time on my hands I dropped in at the Refrigeration Components at 15 Steuart Street in San Francisco. This store is operated by Fred Esser and caters mostly to men engaged in marine refrigeration service. Fred Esser is an old hand at the business and was for several years superintendent of the construction and service department of the George E. Swett Company. He knows every one who is even remotely connected with marine refrigeration in this area and whenever the boys have time to spare they drop in. If they don't come to buy parts, they come to shoot-the-bull. ((I don't suppose the lounge he has fixed up on the second floor of his place, with coffee making equipment and etc., has anything to do with it.)

The last time I was there the usual gang was around, Jack Frost, foreman of the construction and service department of this establishment; Lyle Moore, the fellow who gives such pleasant and efficient service behind the counter, and Bill Evans, Fred's salesman and man-of-all-work. Bill Evans is another old-timer in the refrigeration business, and since this yarn is mostly concerned with an experience of his, I may as well tell you something about him.

Evans started his refrigerator career in 1923 while in the U. S. Navy. He served as an operator on an Allen Dense Air Machine aboard the U.S.S. Rochester. After serving four years in the Navy he worked as a service engineer in Pennsylvania and New York until 1927, when he came to California. He spent a year in England, Scotland, and

Headquarters of Refrigeration Components in San Francisco which caters mainly to the marine refrigeration trade. It is in this building that Fred Esser, operator of the business, maintains a second floor lounge equipped with coffee-making equipment for servicemen.

Wales for the Super-Cold Company as a salesman and application engineer. And in teaching the local people how to operate and service the equipment he had sold them. He also put in a year aboard the United Fruit Ship Talmanca as a reefer operator. He has been in San Francisco since 1938. First with the George E. Swett Company, and now with The Refrigeration Components.

It was getting on toward lunch time so we got the coffee pot going and the bull session began. At first the conversation was general. We exchanged experiences and told our latest stories. As usual everybody tried to outdo the other guy. We were just about holding our own when Evans came up with the story that stopped us, and won the fur-lined tubing stretcher.

Here, in Evans' own words, as near as I can recall them, is the story. "In 1929 I was working for a service outfit in Bisbee, Arizona. This company had a large territory and maintained a branch in a little town just across the border from Naco, Mexico. There were a lot of mines in this

area and on paydays, which was twice a month, Naco did a thriving business. It was during prohibition, and miners from both sides of the border would flock into Naco for a celebration.

"Just before each payday it was one of my duties to go to Naco and check all the beer cooling equipment. We had service contracts for fifteen saloons. My procedure was to go into a place and draw a glass of beer from each tap. Then I would put a thermometer in each glass and check the temperature. If the beer was cold enough I would go on to the next place. Now being of a saving nature that doesn't like to waste anything, I always drank the glasses of beer I drew to check the temperature. By the time I had made my fifteen calls the refrigeration equipment was well checked, and so was I. Checked and double checked. Sometimes I had a little trouble making it home, but I was never more than three days late.

That Last Call

"On this particular day I hadn't run into any trouble and I hadn't wasted any beer. I was getting along fine until I made my last call. When I went into this place I found that the beer was warm. A fine thing! The unit was in the basement and I went down to see what the trouble was. Access to the basement was through a trap door behind the bar. After I was in the basement the bartender closed the door. There wasn't much wrong with the unit, the condenser was dirty and the water regulating valve was out of adjustment. I cleaned the condenser, re-set the water valve, and everything was all right. This was my last call and I was taking it easy. There was plenty of cold bottled beer down there and I took the temperature of several bottles. It was cool in the basement and for some reason I began to feel drowsy. I must have dozed off for when I looked at my watch it was pretty late, so I decided to head for home.

I gathered up my tools and hammered on the trap door for the bartender to open up. No answer. I hammered and hollered for several minutes. Still no answer. I did everything I could think of to attract attention, yelled, hammered on the door, beat on the pipes with a piece of iron, but I couldn't raise anyone. I finally decided that if I wanted out I would have to force the door open.

"It was a very heavy door and took two men to raise it. I found a piece of 4x4 about 12' long, and a block of wood from the beer barrel racks. After some effort I got the door pried up about six inches. Now, I thought, I'll be able to attract the bartender's attention. I crawled up the steps and was peering out through the crack when something thudded into the door right next to my head. I dropped hastily down the steps and was surveying the situation, when something else smashed into the underside of the door. At first I thought there was a payday brawl going on upstairs and that someone had thrown a bottle, but when I examined the place where the last object had struck I found that it was a bullet. Well for Pete's sake, I thought, what's going on up there? The boys are really getting rough.

The genial staff of Refrigeration Components is pictured above. Left to right they are: Fred Esser, Owner; W. J. (Bill) Evans; W. J. Esser; Mary Ann Esser and Lyle Moore.

"I had a small mirror with me and by lying on my back and holding the mirror up to the crack I could keep out of the line of fire and see what was going on. My periscopic range of vision was limited, so it took me some time to get the picture. Here is what I saw—there was a gang of about ten men crouched down by the front wall of the building. (The walls were of adobe and must have been at least a foot thick.) These men were all armed and appeared to be firing through the windows at a building across the street. As near as I could tell there was another, larger, group of men across the street who were firing back. What a spot to be in. It looked as though I was right in the middle of a revolution.

"Now what could I do? Suppose they burned the building down? I'd be roasted alive, or smothered to death, which was just as bad. Something had to be done, and quickly. I wracked my brain for some way out, but couldn't think of any feasible solution. But a refrigeration service man is used to solving tough problems and finally I thought of something. There was a full

(Continued on page 72)

Front view of the Los Angeles postwar house.

The Future home
Year Round Air

By FRED A. HERR

SPECULATION and discussion engaged in extensively during and before the war on the probable extent of year-round air conditioning as an influencing factor on postwar home design, particularly in respect to the conventional type of window construction, are brought into focus of practical consideration in the Los Angeles Postwar House, an experimental design and construction project recently opened by the Fritz B. Burns Organization of that city.

Into this house, said to represent an expenditure in excess of $100,000 for pre-construction research and actual building cost, have been materialized the conjectural discussions of the past half dozen years concerning how radically the long-established concepts of residential construction would be affected by an air conditioning system designed to provide cooling in summer and heating in winter to an extent that the use of windows as ventilation factors for the fresh air would be eliminated.

The food preparation center of the kitchen in which can be seen the refrigerator, extreme right designed to fit in with the streamlined pattern of the counter arrangement.

Some 200 manufacturers of building materials, appliances and machinery were interviewed by Joseph H. Schulte, director of the Burns Research Division, on a nation-wide tour which he made preceding the start of construction.

Latest Materials Used

Schulte was able to focus into the spotlight of practicability much nebulous thinking on home design, with the result that more than 100 manufacturers co-operated by placing at the disposal of the Burns Organization new designs in materials and equipment for incorporation in the Postwar House at Los Angeles. Many of the ideas used, it is reported, were still in the discussion stage or on the drafting boards when the sponsors agreed to permit their inclusion in the house.

In addition to the year-round air conditioning installation, new departures in home refrigeration in the form of a revolutionary type console-height drawer refrigerator, and some new designs in kitchen frozen food cabinets and fresh air vegetable units will be described in this article.

A permanently sealed system of fenestration, made possible by year-round cooling, heating and air filtration, was one of the ideas which the Burns Research Division decided warranted consideration in the plans. The decision to incorporate the latest conceptions in air conditioning was reached in view of the fact that it has long been held by advocates of all-year air conditioning that a system designed to provide an adequate supply of air, combined with air cleaning and room temperature control in the various seasons of the year, would bring the

designed for

Conditioning

Rear view showing wide window expanse.

sealed-house principle within the realm of practicability and render obsolete existing window designs of both the vertically moving double-sash type and the hinged-door French window type.

Windows of that type, it has been pointed out, are designed for a tri-functional purpose: (1) Vision—to look through; (2) admission of daylight; and (3) for ventilation, by opening either upward, downward or inward.

Year-Round Air Conditioning

The necessity of subordinating window design to those various objectives, the advocates of year-round air conditioning have contended, resulted in reducing the effectiveness of the principal purpose of a window—the admission of daylight into the room; and has also resulted in limiting the dimensions of windows, which have had to be accommodated in length and width to conform to conveniences in lifting or lowering them for ventilating purposes.

None of the restrictions on window design cited above apply in the Los Angeles Postwar House. Year-round cooling or heating of the interior has made it possible to ignore conventional window design. The dimensions of windows in this house are limited only by the wall areas available in the respective rooms or the assignment of window space as governed by the overall house plans. The main window in the kitchen, for instance, consists of one uninterrupted panel of double-paned glass six feet high by 10 feet wide. The patio side of the living-room consists of an expanse of window 20 feet wide by 10 feet high, composed of four double-panes each five feet wide by ten high.

These, and another window of generous proportions in the master bedroom are considerably larger than would have been possible had they been designed for periodic opening for ventilation.

Windows Permanently Sealed

The year-round air conditioning with which the Postwar House is equipped has made practical the use of permanently sealed windows because the need for opening them for ventilation has been entirely eliminated. The large windows in the living room and kitchen, and smaller ones along the front and sides of the house, are of dual Thermopane with a dead-air space between the two panes. This arrangement, the designers of the house claim, provides an effective insulating cushion.

The large window in the master bedroom is of heat-absorbing Libby-Owens-Ford Thermopane which contributes an insulating value similar to that provided by the living-room and kitchen windows, and is

The specially designed console refrigerator shown with drop door opened, exposing the evaporator. The refrigerator is not a conventional design.

said to have the additional advantage of retarding heat waves of the sun.

The house is built in a broad "U" shape, fronting on Wilshire Boulevard at the corner of Highland Avenue, Hollywood. It's design follows Solar principles, with insulation and fenestration planned in accordance with that idea, broad eaves to keep out the hot rays of the summer sun, and a special type aluminum roof which also acts as a retarder of sun rays.

The outdoor barbecue center shown here is equipped with a separate Servel gas refrigerator installed at the end of the sink, far left.

The roof is constructed of 1x8 ft. shingle-like panels formed by moulding sheets of bright aluminum around pieces of celotex board. In addition to being effective in turning back the rays of the sun, the bright aluminum surface is claimed to possess considerable value as reflective insulation over and above the effectiveness of the celotex board. Sidewalls and ceilings are insulated with balsam wool between studs and ceiling joists.

The ceilings are accoustically treated, some with acoustical plaster, others with acousti-celotex perforated tiles of sound-absorbing materials.

Airtemp Cooling-Heating System

Year-round air conditioning of the post-war house is accomplished with a combination Chrysler Airtemp installation which, replete with Moduflow thermostats and controls, is housed in an equipment room at the rear of the building. The design of the system represents the collaborative efforts of the Cooling & Refrigerating Co. of Los Angeles, which firm installed it, and the general engineering staff of the Chrysler Corp. Airtemp Division.

Combined in the system are an electric-powered 3-SCD cooling unit for summer air conditioning and a G-70 gas furnace for winter heating. The various units required to bring outside air into the house, clean it and heat or cool it are installed in a row along the south wall of the machinery room. These units, in the order of air movement, are (1) a galvanized iron intake duct extending from ceiling to floor; (2) a Westinghouse Precipitron air cleaner; (3) a G-70 gas furnace; and (4), a 3-SCD cooling unit, above which is mounted a suction fan with a capacity for drawing 1500 c.f.m. of air through the system. The Preciptron's height being somewhat lower than that of the adjacent heating and cooling units, its top provides a convenient location for mounting the Moduflow thermostats and other control devices.

Cooling Capacity 36,000 B.t.u.

The system is designed for a cooling capacity of 36,000 Btu. per hour and a heating capacity of 70,000 Btu. per hour. The direct ventilation principle is employed whereby an outside air intake brings air into the machinery room, with the fan drawing it, first into the Precipitron for cleansing, and then into the heating and cooling units. The air drawn in is mixed with return air an a ratio of 1,000 c.f.m. recirculated to 500 c.f.m. fresh.

One thermostatic control center controls the temperature. The air conditioning system is designed for a certain occupancy on a 15° temperature differential to maintain 78° F. inside when it is 93° F. outside, and to maintain a relative humidity not to exceed 45 per cent. The heating capacity is set to maintain 70° F. inside when it is 35° F. outside.

Supply Ducts Above Ceiling

A more or less standard system of blower and duct arrangement is used for alternate cool or hot air distribution. The main supply ducts are of galvanized iron, bound in two inches of spun glass insulation. The main ducts are laid above the ceiling of the living-room and the hallways to supply the treated air to the living-room, dining room, master bedroom, children's bedroom, den and kitchen. In the kitchen the air discharge is from the above-ceiling duct through an air diffuser mounted in the ceiling. In the other rooms a branch duct extends between the studding to a grille in the sidewall just below the ceiling.

Precipitron Air Cleaner

The house is equipped with an air cleansing unit which the sponsors claim is capable of removing 90 per cent of dirt, dust and impurities in general from the air. They cite the installation as capable of keeping the air within the rooms practically dust free and as virtually bringing about that housewifely millenium in which furniture dusting becomes only an occasional requirement.

The air cleaning equipment consists of a Westinghouse Precipitron electronic air cleaning unit which cleans 1,500 cubic feet of air per minute and traps electronically particles as minute as 1-250,000th of an inch diameter. Oil, mist and tobacco smoke are also eliminated by the unit.

In view of the fact that the Precipitron is designed to remove dust as well as pollen from the air, the Burns Research Organization has under consideration the making of tests to determine whether persons afflicted with asthma and hay fever experience relief under the conditions of air purification made possible by the installation in the Postwar House.

Supplemental radiant panel heating is provided in the master bathroom and the auxiliary bathroom off the kitchen. These are "Panelray" heaters, produced by the Day & Night Manufacturing Co. of Monrovia, Calif. Both are of the full-length, infra-red type, mounted in the bathroom wall and designed to heat the body rather than the room.

Bathroom and Range Ventilation

Each bathroom is ventilated by a noiseless suction fan installed above a grille in the ceiling, with vent electrically operated by a 24-volt reversible 10 rpm. shaded pole motor.

A new type gas range in the kitchen, which is equipped with top burners arranged along the back of the range top, made possible the use of an effective range venting system. The range is installed against the east wall of the kitchen directly beneath a cupboard attached to the wall. A duct, with its lower opening just above the burners, extends up the cupboard, through which cooking odors and fumes are drawn by a suction fan mounted in the attic. A grease filter prevents duct and fan from becoming clogged with grease.

The kitchen appliance which has been bringing forth the most frequent comment from housewives and prospective home builders since the house was opened to public inspection is the refrigerator. This is a gas burning Servel of somewhat revolutionary design. In shape it falls within the "console" classification, but its design as a whole and its method of installation embody radical design ideas that have made the model in the Postwar House the subject of considerable pro and con discussion.

The refrigerator is of table height. It fits exactly within the height of the U-shape counter which rims three walls of the food preparation center. Its top forms part of the moulded formica shelf which provides working space in this section of the kitchen. The refrigerator thus blends into the streamlined design of the kitchen. One of the advantages of the console type which is

(Continued on page 70)

Air conditioning and air cleaning units which serve the postwar house are installed in a separate machinery room. The galvanized iron air intake duct is shown at the right; next in order are the Precipitron electronic air cleaning device, and the two units of the Chrysler Airtemp air conditioner—a G-70 automatic gas furnace and a 3-SCD cooling unit for summer air conditioning. A 1500 cfm. fan is installed in the cooling unit, far left. The Moduflow thermostats and controls are mounted on top of the Precipitron.

The air conditioning system shown here is designed for a cooling capacity of 36,000 Btu. per hour and a heating capacity of 70,000 Btu. per hour.

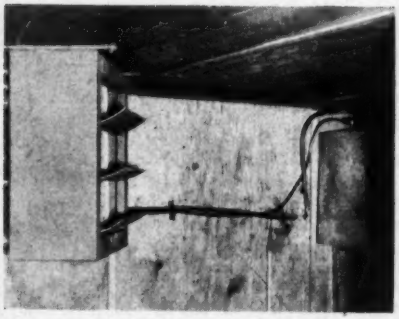
Refrigerated Bottling

Ethyl Chloride

By JAMES CLYDE PORTER

ETHYL CHLORIDE, a highly volatile liquid and explosive in proper mixture, presents problems in bottling. Under normal conditions the liquid would give off fumes through vaporising which would soon put to sleep the person bottling it. The Spray Pack Products Co. of Cleveland, Ohio, bottlers of ethyl chloride in small four ounce bottles put up especially for physicians, dentists and the like who do not use sufficient quantities to purchase it in larger containers has solved this bottling problem with an especially designed refrigeration unit that eliminates this bottling hazard.

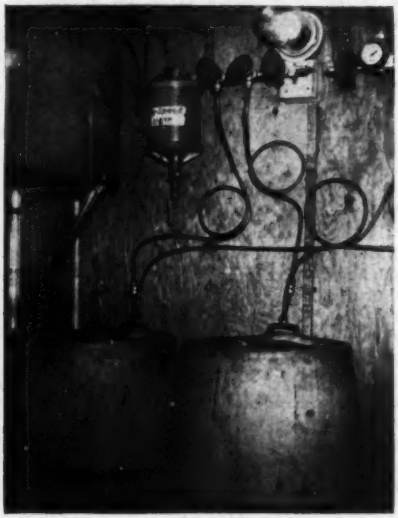
W. E. Vensel, President of the Spray Pack Products Co. consulted Commercial Refrigeration, Inc., of Cleveland, Ohio, distributors of York equipment. This concern's General Sales Manager, Dewey H. Dolison, an engineer together with B. S. Miller, another engineer worked out the details for a refrigeration unit that has solved the bottling problem. This unit consists first of a walk-in cooler, six by nine feet, into which the drums of ethyl chloride are stored. This unit has a three-quarter horse power water cooled York compressor which maintains the temperature at 32 degrees F. above zero. G.E. mercury switches are used to turn on and off the lights and the motor is of the explosion proof type. The drums



Storage room for the drums of ethyl chloride is equipped with a blower type coil which keeps the room at 32° F.

Ethyl chloride, cooled to 0° F. is transferred from large drums to four-ounce bottles without sleeping danger to the operator.

of ethyl chloride, weighing 200 pounds each, are stored in this walk in cooler for a period of six hours before they are opened and used. A six hour storage period in this walk-in cooler cools them down sufficiently so that they can be opened. As each drum is opened, a bung is inserted that has two tubes in it. The tubes are of copper and



The 200-lb. drums of ethyl chloride which are stored in a walk-in cooler kept at 32° F.

are quarter inch in diameter. One of these tubes extends into the drum only below the head of the drum while the other extends through the liquid content down to nearly the bottom of the drum. The tube that extends into the drum only just below the head of the drum is for the admission of compressed air into the drum at a pressure of four pounds per square inch. This compressed air being pumped into the ethyl chloride filled drum at the top of the drum forces the ethyl chloride up through the other copper tube that extends down to almost the bottom of the drum.

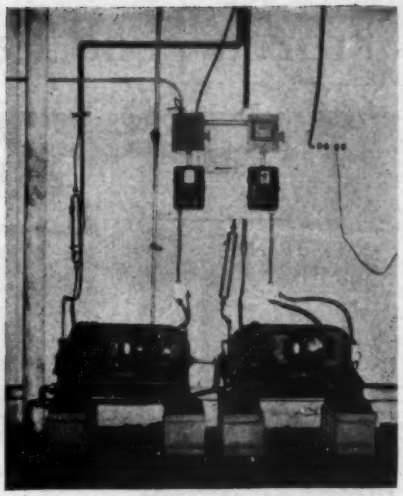
From the drum the ethyl chloride is conveyed to an Alsop disc-pak filter passing through it and continuing its journey through what is termed a "tube within a tube" cooler. This cooler consists of a quarter inch diameter tube within a half inch copper tube, the larger tube being filled with "Freon" refrigerant. In this way the smaller copper tube filled with ethyl chloride is surrounded by refrigerant. This cooling unit is provided with a three-quarter horse power compressor of the instantaneous type of direct expansion which cools the ethyl chloride to zero F.

12,000 Bottles a Day

From here the ethyl chloride continues on through the copper tube to a filling valve operated manually by foot pedal. At this point the four ounce bottles are filled without the sleeping danger to the operator. The ethyl chloride is carried along from the drums to the filling valve solely by the air pressure that is forced into the drums to raise the liquid up through the copper tube. The production capacity of the filling valve is 12,000 four ounce bottles in an eight hour shift.

The two purposes of this unit were, first, to cool the drums of ethyl chloride sufficiently so that the drums could be opened and a special bung inserted for the entrance of compressed air and the drawing off of the liquid, and second, so that the ethyl chloride could be later cooled to a point sufficiently below the evaporation point of 53 degrees F., so that bottling operations might be carried on without the sleeping danger to the operator at the point of bottling.

The motor on the compressor is in the basement and outside of the operating area wherein the ethyl chloride is handled so it is not of the explosion type. Both compressors, that in the cooling unit and that in the walk in storage cabinet are identical so that they may be interchanged in case of a breakdown of either.



Two ¾ hp. condensing units power the job. One cools the walls in storage cooler and the other cools the instantaneous direct cooler.

The ethyl chloride is bottled in four ounce bottles equipped with a patented cap that reduces the ethyl chloride to a spray instead of sending it out in a minute stream.

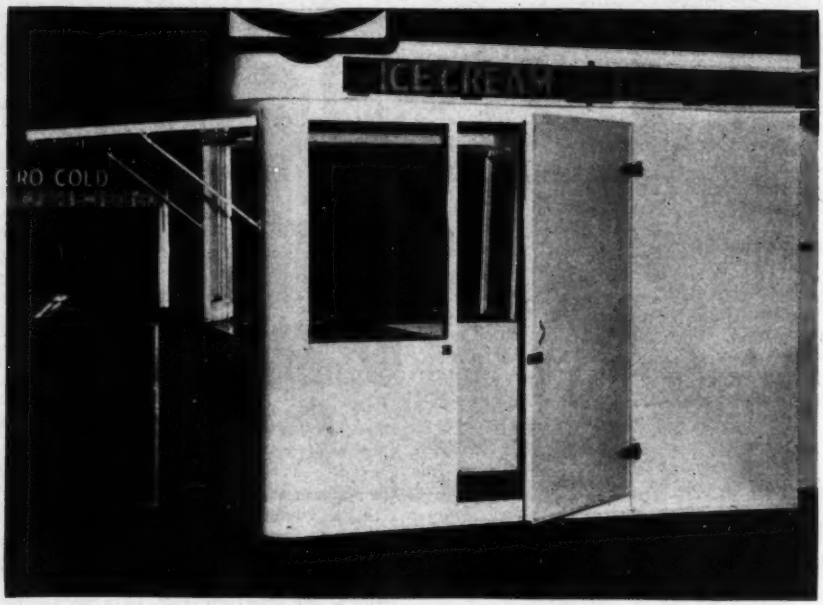
NASH-CROSLEY IN PATENT COMPLAINT

THE Nash-Kelvinator Corporation, Baltimore, charged Aug. 14 in suit filed in U.S. District Court at Cincinnati that Crosley Corporation had infringed on patents covering refrigerators.

The complainant alleged that prior to Nov. 5, 1945, the Crosley company had been licensed to use these patents, but on that date the license was terminated by Crosley and since, it was charged, it has been manufacturing refrigerators embodying these patents without license from Nash.

Because the Crosley Corporation won a suit against Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., involving 16 of 18 patents claimed by Westinghouse to have been infringed by Crosley in four suits entered in U. S. District Court at Cincinnati in August, 1941, Westinghouse Aug. 14 filed notices in the court dismissing the four cases.

Frozen Food Pantry on Wheels



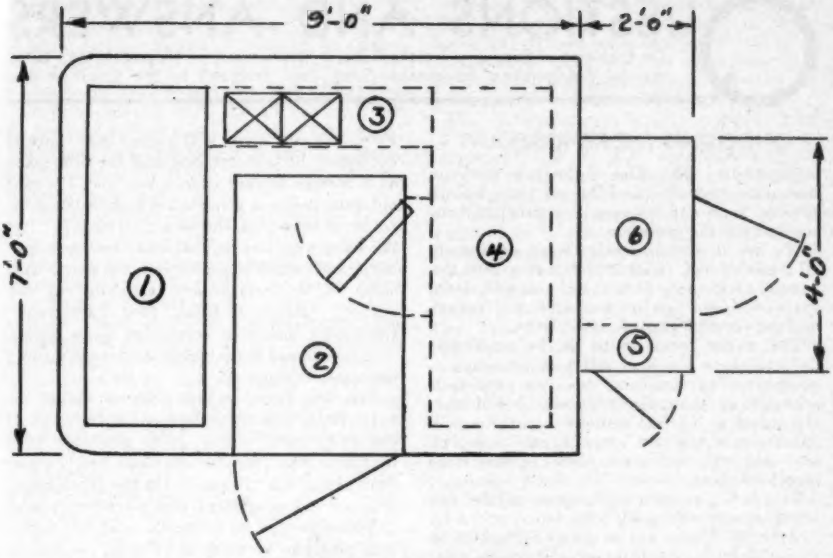
The frozen food pantry developed by Zero-Cold Company and displayed for the first time at the Los Angeles Home Show.

A DEVELOPMENT which made its official debut at the home show held July 12-21 at the Pan Pacific Auditorium, Los Angeles, Calif., is the portable Frozen Food Pantry built by Zero-Cold Company.

The retail distribution of frozen foods as a solitary enterprise, while very successful in certain instances, is a somewhat risky undertaking due to the great importance of proper location. On the other hand it is very attractive to newcomers such as veterans on account of its modest financial requirements, absence of risk through spoilage, avoidance of certain sanitation requirements because all retailed frozen foods are fully packaged, and its freedom from sales taxation because the merchandise is victuals.

The new development eliminates the element of risk from location: it is a complete frozen-food store, yet it is portable. As may be seen from the floor plan, it offers about 24 cu. ft. of frozen display space in the front and the same volume in the back of the operator as undisplayed storage. To his right, under a standard ice-cream lid, about 8 cu. ft. of space holding packaged ice creams, eskimo pies, and the like, while above the frozen-storage space more than 36 cu. ft. of refrigerated space is accessible through one door, 2 ft. wide by 3 ft. high. Nevertheless, all this is readily portable due to the ingenious construction.

A strong angle-iron frame work is clad in vapor-proof manner with heavy-gage sheet metal which forms the outer shell of all refrigerated space and of the store as well eliminating all duplication of material as is unavoidable when refrigerated equipment is installed in a store. While there is all the space wanted for the merchandise as well as for the sales personnel, there is not an inch wasted, and the complete unit, ready to operate, can easily be moved on its casters, up on a platform truck, off to a new location, and down in place. It is not even necessary to remove the food, unless the



FLOOR PLAN OF FROZEN FOOD PANTRY

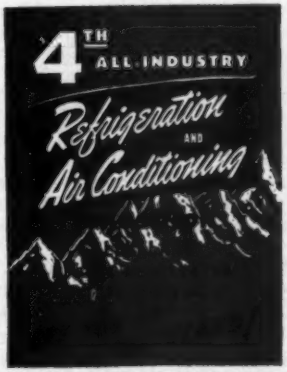
(1) Frozen food display counter; (2) Operator's space; (3) Ice cream compartment; (4) Frozen food storage space in lower part of refrigerator; (5) Regulation electric meter compartment with (6) Closet for paper bags, operator's hat and coat, etc. over machine compartment.

trip is a very long one. The cornice which shields the walls against the heavy down pours as well as the strong noon-time sunshine peculiar to the Southwest is illuminated from within and advertises to the oncoming traffic at ample distance for stopping.

Six Inches of Insulation

The thickness of the insulation, which can easily be observed as six inches, together with about 360 ft. of prime evaporative tubing ingeniously applied for thermal extension makes it inexpensive to operate as far as refrigeration is concerned. Under average climatic conditions, I was told, the 1½ hp. Freon compressor in the lower part of the annex is ample for liquefaction. For desert location, a 2 hp. machine is furnished.

This so-called Frozen Food Pantry is practically the work of one man. Ogden Hunsaker, a colorful Californian widely known through his daring automotive feats of former years as well as his outstanding success as a builder of typical Californian homes, is its creator. This expression means to cover conception of the idea, design of every part with attendance to all details, and personal supervision of every phase of construction, most of which is performed in the factory he has organized for the purpose under the hardest of post-war conditions. It is operated under the name of Zerocold Company in Los Angeles.



IF YOU HAVE NOT ALREADY DONE SO MAKE YOUR RESERVATIONS NOW FOR THE ALL-INDUSTRY SHOW.

QUESTIONS AND ANSWERS

On Problems of Servicing, Installation and Maintenance of Household and Commercial Refrigerating Equipment—Send Your Problems to the Question Box.

CHOOSING THE REFRIGERANT

QUESTION 761: The following problem has come up to us, and having little knowledge of ammonia, we would appreciate your version on the problem.

We are to install refrigeration equipment on a mink farm, capable of freezing 2400 lbs. ground meat every 24 hrs. and also additional space for holding room, and we recommended using "Freon" and plates.

The owner seems to be set on ammonia; he says some ranchers tell him ammonia is cheaper to operate, and the iron pipe coils are cheaper than plates on the initial cost. He stated a 7½ hp. ammonia machine will operate as cheap as a 5 hp. "Freon" compressor, and will do more work in the same length of time.

Can you give us a comparison of the two refrigerants, each using 5 hp.?

ANSWER: There are so many factors to be taken into consideration when choosing a refrigerant that it is impossible to make any broad assertion that one refrigerant is in general better than another. One refrigerant may be most suitable for a certain application, while some other refrigerant may be much better for use in another application, or with some other type of refrigerating equipment. Ammonia is a very fine refrigerant, and it has many advantages, but it also has some disadvantages, and the same may be said of practically any other refrigerant, including "Freon-12."

There is very little difference as far as the efficiency between the various refrigerants is concerned, certainly not as much as the difference between 5 and 7½ hp.

Temperatures suitable for freezing and holding ground meat for the mink farm can be obtained very satisfactorily where either ammonia or "Freon" are used, and the difference in cost of operation is negligible. For example, under standard ton conditions, ammonia has .973 hp. per ton, "Freon-12" .997, and under the same conditions the coefficient of performance of ammonia is 4.85, "Freon-12" 4.72. As a matter of fact, on those three points methyl chloride is somewhat better than either "Freon-12" or ammonia, and yet "Freon-12" is to some extent replacing methyl chloride, due to certain other factors in which "Freon-12" is more desirable, such as flammability, toxicity, etc. From the above you will gather that there is extremely little difference, and the difference as a matter of fact is so small that I would not even make a general recommendation in favor of either of the two. "Freon-12" has the advantage of lack of odor and non-toxicity, and non-flammability in the event that some of the refrigerant leaks out of the system. Also, I think that "Freon-12" equipment has been somewhat more highly developed, and more highly modernized, than ammonia equipment.

For the same capacity there should be very little, if any, difference in the cost of the evaporator coils. It is probably true that iron pipe coils for ammonia are cheaper than plates for "Freon." On the other hand, they are not as efficient, and moreover, plates can also be used on ammonia, and vice versa, iron pipe can be used on "Freon," so that it is not a matter of difference in refrigerant, but a difference in the selection of the type of evaporator to use.

On the whole, your customer is more apt to get a more up-to-date and more modern job, more nearly fully automatic, if he uses "Freon" equipment that if he buys ammonia equipment, especially in the smaller horsepower sizes such as will be required for the application that you have in mind.

CONDENSING UNIT RATING

QUESTION 762: Can you tell me the number of Btu. per hour a one hp. air cooled condensing unit will remove from a cooler under normal conditions? Also the figures for ¾, ½, ⅓ and ¼ units? Are these figures standard for all makes of units? If exact figures are not available, any information you can give me will be greatly appreciated.

ANSWER: The Btu. rating of any condensing unit will vary according to the bore, stroke and speed of that unit, the temperature of the condensing medium such as water or air, and the suction pressure maintained. The Btu. rating per hp. may vary from one manufacturer to another because the bore and stroke of each compressor may be different, while the same hp. motor is used.

When you speak of normal conditions, I assume you mean the medium temperature applications and as an example, I would quote the capacities given for a Servel air cooled machine operating on methyl chloride

with a 15° or 11.6 lbs. per square inch back pressure and a 90° room temperature. A ¼ hp. unit under these conditions would have a Btu. per hour rating of 1760; ⅓ hp. 2560; ½ hp. 3680; ¾ hp. 5300 and 1 hp. 8,010.

As stated before, these are the figures for just one manufacturer and they would not fit the capacity of another make of machine. Manufacturers specifications should always be referred to in calculating the size of condensing unit required.

WHERE DOES OIL GO?

QUESTION 763. Perhaps you can assist me in proving my point—or proving me wrong. In an R-42 Kelvinator when the pump slugs its oil and it collects in the receiver, my contention is that since it is a highside float the oil remains on top of the gas and the only way to remove the oil is to flush the receiver after removing it. My opponent claims that the oil in the receiver is carried off back up to the evaporator and down to the compressor crankcase. Will you kindly inform me as to who is right in this matter?

ANSWER: You would perhaps be right in your contention that the oil will remain on top of the refrigerants or in other words collect in the receiver of the highside float system if it were not for the fact that very little liquid remains in the highside float.

The fact is that highside floats are so constructed that it takes but a few ounces to raise the float permitting oil and refrigerant to pass out the float outlet and into the evaporator. A small amount of oil will very likely remain in the float chamber but this amount will be very small.

Oil will remain on top of refrigerant in ordinary type horizontal receivers, particularly where outlet of receiver is at the bottom and there is little turbulence of refrigerant in the receiver. The hightside float does not act as a receiver except when it is desirable to pump down the system and hold all the refrigerant in the high side.

Under normal operation not much more than two or three ounces of liquid refrigerant will remain in the highside float and receiver. Furthermore, since the entry of liquid is usually at the top of the highside float, there is a tendency to keep the oil and refrigerant thoroughly mixed, thus more of the oil will pass out with the refrigerant.

HIGH HEAD ON AMMONIA

QUSTION 764: Having received some valuable information from your Question Box I would like to have some advice on what to do to reduce the head pressure on a York 6½x6½ ammonia compressor used in a dairy for cooling milk with the following setup.

The condenser is a 2 section double pipe (2"—1¼") atmospheric condenser having approximately 280 ft. of 2" pipe with a 5'x12" receiver tank. The condenser is located in an open building. The tower is on the roof a 6'x8'x10' high atmospheric type. Water temperature in pan of tower is 78° and the discharge water at the sprayers is 94°. The evaporator is a brine tank job 5' wide 15' long 4' high (inside measurements) having approximately 1600 ft. of 1¼" coil fed by 1 Alco Type T.G. 1-15 and one Alco Type T.G. 1-10 T.X.V. The brine temperature in the morning before milk is being cooled is 13° at about 5 o'clock. By about 2 o'clock when cooling is finished the brine is up to 40°. The compressor is running all the time from 5 o'clock in the morning until 8 o'clock in the evening when it is shut down until the next morning. While the compressor is operating the head pressure stays around 240 lbs. with a back pressure of 20 lbs. This back pressure is held at 20 lbs. by adjusting the liquid line shut off service valve at the receiver; it is opened very little, about ⅛ turn. If it is opened farther the head pressure keeps climbing up to 270 lbs. when the head pressure cutout shuts it off. This is one thing I cannot understand. The machine was installed about 4 years ago (all used equipment) by a reliable refrigeration concern and the man who takes care of this equipment was advised to control the pressures this way. The system has been purged time and again without any results.

In the evening at 8 o'clock when the machine is shut down for the night, about one quarter of the coils have a slush of ice on them, that is the inlet end of each valve section. This holds until morning. The liquid level is held to about 2" of the bottom of the receiver. This has, by the color of it in the glass, quite a bit of oil mixed with it, I think this machine needs more condensing space or is the cooling tower too small?

May Add More Power

The owner has been talking about adding an additional 4½x4½ compressor to this brine tank and getting an additional shell and tube condenser 20'x10'. What do you think of this? Would that help the condensing space for the present trouble? How about the brine tank—would he gain any capacity by adding an additional compressor and condenser, or would it be better to add more condenser to the present setup and operate the machine with the receiver valve fully open and flood the full length of the present evaporator coils? Kindly give me your sug-

gestions as to what would be the best thing to do with the setup as it is now, and also what to do if the final decision is made to add another compressor.

More Information Needed

ANSWER: There is certainly something radically wrong with the dairy refrigerating system you describe. It might be several things, however, so we will need further information in order to make an accurate analysis for you.

For this reason will you provide the answers to the questions that follow: I. Speed of 6½" compressor? 2. Pounds milk cooled per hour? 3. Initial and final temperature of milk going over cooler? 4. What other refrigerating load is there in addition to milk cooling? 5. Do you have positive knowledge that the condenser tubes are clean on both the water side and condensing side of the 1¼" pipe?—Editor.

EDITOR—I appreciate the interest shown in helping me on the dairy equipment system trouble and hope the following answers to your questions will aid you in solving the problem. I. Speed of 6½x6½ compressor 210 rpm. 2. 5,000 lbs. skim milk cooled per hour. (Total 17,000 to 18,000 lbs.). 3. Initial temperature of skim milk 80° Final temperature 46° or cooler if brine temperature holds out. 4. Cream 60 gal. per hour. Total 600 gal. Initial temperature 98°. Final temperature 46°. 5. Condenser is positively clean on water side as this has been cleaned and inspected quite often, but am not sure about the condensing side. This has not been inspected since installation three years ago.

May I also add the following: The whole milk after leaving the pasteurizer is cooled down to 98° with city water then separated. Then the skim milk is cooled again with city water down to 80° before going over the brine. The condenser water is circulated with a Lewis pump ¾ hp. motor 3450 rpm. 1¼" suction and discharge pipe increased to 2". Water entering the condenser at the bottom, the refrigerant entering at the top.

ANSWER: I have gone over the additional information sent me in regard to the dairy refrigeration job. Although a little less than 20,000 lbs. of milk and cream are cooled per day the peak hour duty you have given as 5,500 lbs. figures approximately 25 tons refrigeration capacity. This is about double the capacity of the compressor which rates 11 tons at 20 lbs. and 185 lbs. or 14.7 tons with a 30 lb. suction pressure and the same discharge pressure. Therefore it is certainly necessary to store refrigeration in the brine in order to meet the demand of the peak hour.

The condenser has a normal rating of approximately 11 tons refrigeration when 80° water is supplied to it in amount of 3.3 gpm. per ton. Under these conditions the head pressure would be 180 lbs. The overall water requirements is then 36 gals. per minute and 40 gallons per minute would be better.

Since you tell me that the condenser is clean and free from non-condensable gas then I must conclude that there is an insufficient amount of water being circulated through the condenser. This conclusion is corroborated in two ways. First there is a 16° rise in the water going through the condenser which indicates that 20 gpm. or less of water is being pumped. Furthermore I do not believe a cooling tower 10 ft. high would cool through a 16° range if it were loaded with the proper volume of water.

Measure Water Flow

I would suggest that you measure the water flow by diverting the flow at the tower outlet into a barrel or measuring tank. Probably you will find that a larger pump is needed and possibly there is too much resistance in the cooling water circuit.

If a new pump is to be installed then it is well to consider the future. The brine cooling coil is over size for present capacity. This is true if it is well designed for good circulation of ammonia and the brine is properly connected with an oil drain so that it can be kept free of oil. Assuming this is true, the brine coil could handle 20 tons refrigeration or more and further extension should be on the high side. If the machine capacity is increased later then you will need more condenser, larger pump and probably a larger cooling tower.

If this tower is the best type it should rate 24 tons refrigeration and would be adequate to handle additions up to that capacity, but if it is not an efficient tower it is too small to do this.

Assuming it is decided to secure a larger pump I would recommend that the pump capacity be sufficient to give 40 gal. per minute plus 4 gpm. for each ton of refrigeration capacity which will be installed in the future.

SERVICE POINTERS

Practical Solutions of Your Service Problems

THIS department is an aid to service engineers who are seeking new devices or methods to improve their work. All the service pointers have been supplied by the subscribers. THE REFRIGERATION SERVICE ENGINEER invites readers to submit "down-to-earth" practical service and installation information. Five dollars will be paid for each pointer published. Every service engineer has one or more "kinks" that have proved useful in every day practice. Here is your opportunity to exchange service pointers with the other fellow and earn $5.00 for the information. Write up your idea today and mail it to the *Service Pointer Editor*.

EMERGENCY SUGGESTIONS

I WAS called out to fix a leak in a reach-in box. This was a sulphur job. It had been defrosted with the help of an ice pick. The unit was off when the accident happened so no air got in. I put a piece of soft butter over the hole and started the unit. The evaporator frosted over and it didn't leak. The unit ran for three days and there were no leaks and there was no moisture in the system. I then pumped the unit down and repaired it. This butter would have held until the unit was defrosted.

I always carry a bottle of fingernail polish in my kit. It comes in handy to put on the threads of the pipe plug on the service valves. It has many other uses but for an inexpensive joint sealer it can't be beat.

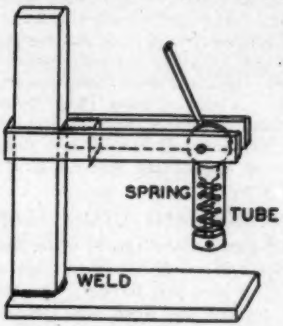
Vacuum Pump

I needed a vacuum pump for the shop but couldn't afford to buy one. I had an old Norge and a Coldspot pump. I mounted them on each side of my grinder which turns at 3400 rpm. They are attached to the shaft by flexible couplings (type used on washing machines) and are hooked in series by ⅜ tubing. This makes a very good two stage pump and, in my case, didn't cost much.

I was called out on a Grunow (bless them). It was out of gas. I fixed the leak and charged it with Carbon Tet. It operated for six months without any trouble. When real warm weather came I changed it back to Carrene.—*Submitted by Lee A. Griffith, Norwood, Mass.*

QUICK-ACTING CLAMP

A quick acting clamp of this nature has several advantages over the screw type. It is very useful in holding parts together while soldering, brazing or welding. When fastened to the bench, the clamp or work will not move while working on it. It is easy



to handle with one hand when the other is holding parts in their relative position. Having no screw to tighten, it is quickly adjusted and tightened with the small cam. —*Submitted by Donald Delayen, Chicago, Ill.*

S S S

SHORT CUT TO HERMETIC REPAIR

WE brought in a '39 cold wall Frigidaire. The owner had used a butcher knife to hurry up defrosting and had cut a hole in the small inlet to the evaporator. Then she closed the door and plugged it in and went to bed, not knowing that she had damaged the evaporator. All the refrigerant had leaked out during the night and by next morning the unit had drawn in air and moisture and was stuck up tight.

We removed the base bolts, slid unit out back of cabinet, removed wires to motor. We soldered the knife hole with Sil-fos then drilled a ⅜" hole in dome, off center (connected a drum of "F-12" to oil drain plug first, to create pressure so that steel chips would not fall into dome while drilling). After drilling the hole we took several solvents such as Xylene, carbon tet., kerosene,

etc. and poured them one at a time into dome hole. These were drained out and the rotor still remained stuck. We then poured in a quart of lacquer thinner and let it set all night. The next day we drained out the thinner which was then a shellac yellow and a shellac consistency. Another pint was added and then blown out with a warm drum of "F-12." It was then rinsed with carbon tet.

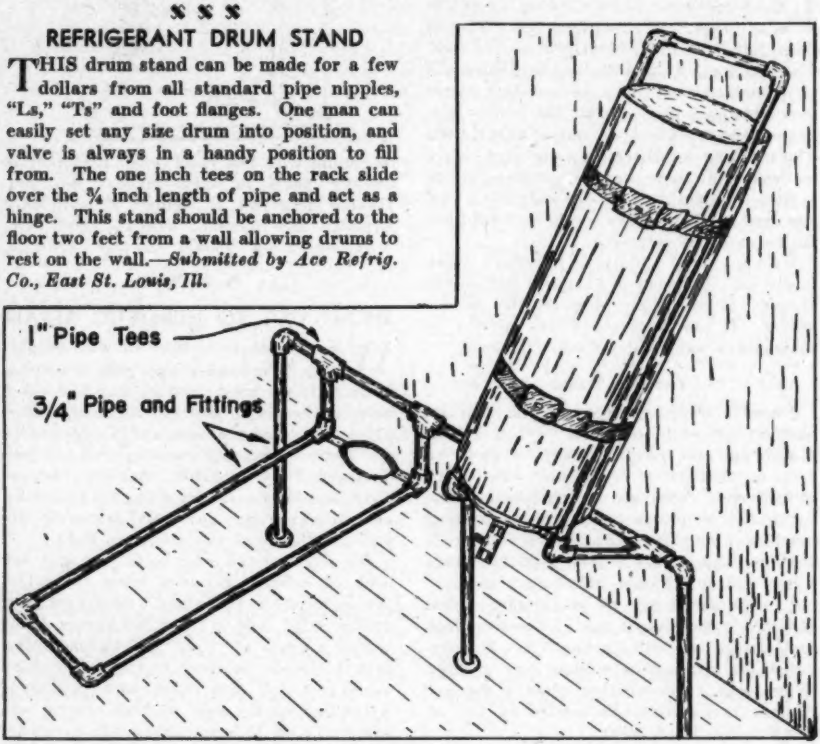
We then took a rod from an end bell of a Delco motor, stuck it through the hole in the dome and rotated the rotor back and forth until it was quite free, then connected up two hot wires to the running winding (black and white), hooked a short jumper line from one of the hot lines to the running winding terminal on motor to start motor. After motor started, jumper line was removed, and motor left running while it was further washed and drained until completely cleaned. A pint of heavy (dry) freezene oil was then poured in and a ⅜ inch brass screw was screwed ¼ inch into dome hole, sawed off and brazed into dome with easy flow rod. Old capillary tube was removed and a full length Wabash replacement tube installed ahead of a ¼ hp. Torpedo dryer. To be safe, we cut the suction line and brazed in two pieces of ¼ inch tubing and connected another dryer on the suction line to keep the rotary compressor clean. Unit was then heated on base with acetylene torch and windings were heated by connecting hot wires to the running windings for seven minutes to drive moisture out of windings. During the heating period and for an hour after, an external vacuum pump was attached to the charging port of unit. After dehydration, vacuum was broken with Herveen. System was then critically charged with Herveen and run and tested. It has worked swell for a month now and kitchen temperatures have been as high as 102° F.

When the Frigidaire was delivered, the lady said she could not see how it could cost $47.00 to just solder a hole and pour in some fluid, but it did, sho nuff!—*Submitted by Arthur Cook Ewers, Hollywood, Calif.*

* * *

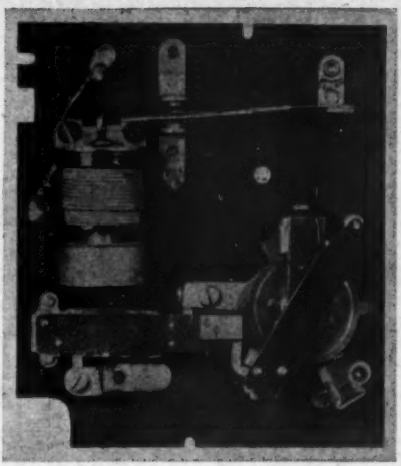
REFRIGERANT DRUM STAND

THIS drum stand can be made for a few dollars from all standard pipe nipples, "Ls," "Ts" and foot flanges. One man can easily set any size drum into position, and valve is always in a handy position to fill from. The one inch tees on the rack slide over the ¾ inch length of pipe and act as a hinge. This stand should be anchored to the floor two feet from a wall allowing drums to rest on the wall.—*Submitted by Ace Refrig. Co., East St. Louis, Ill.*

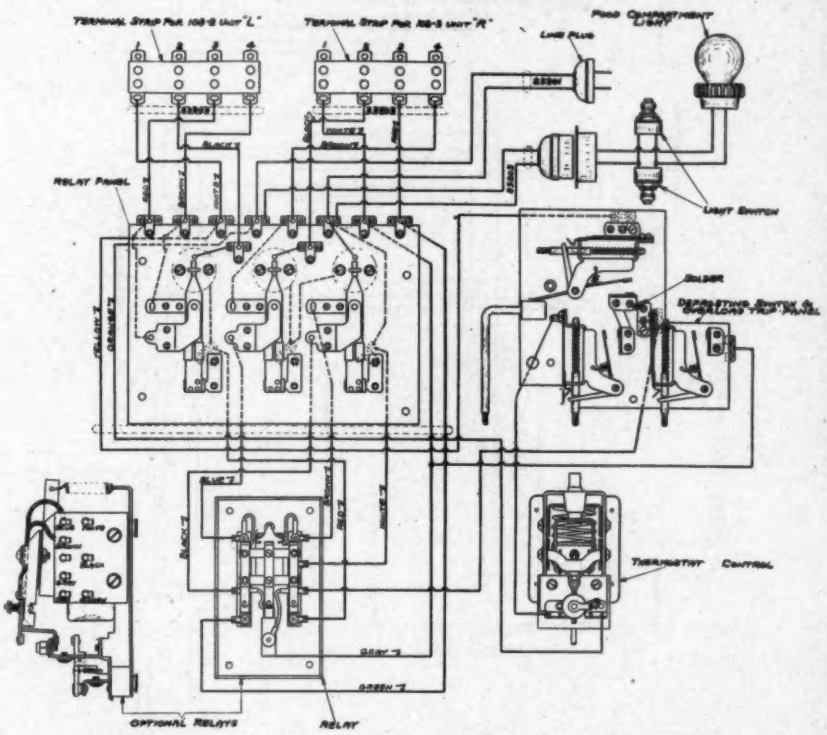


Wiring Diagrams For Majestic Units

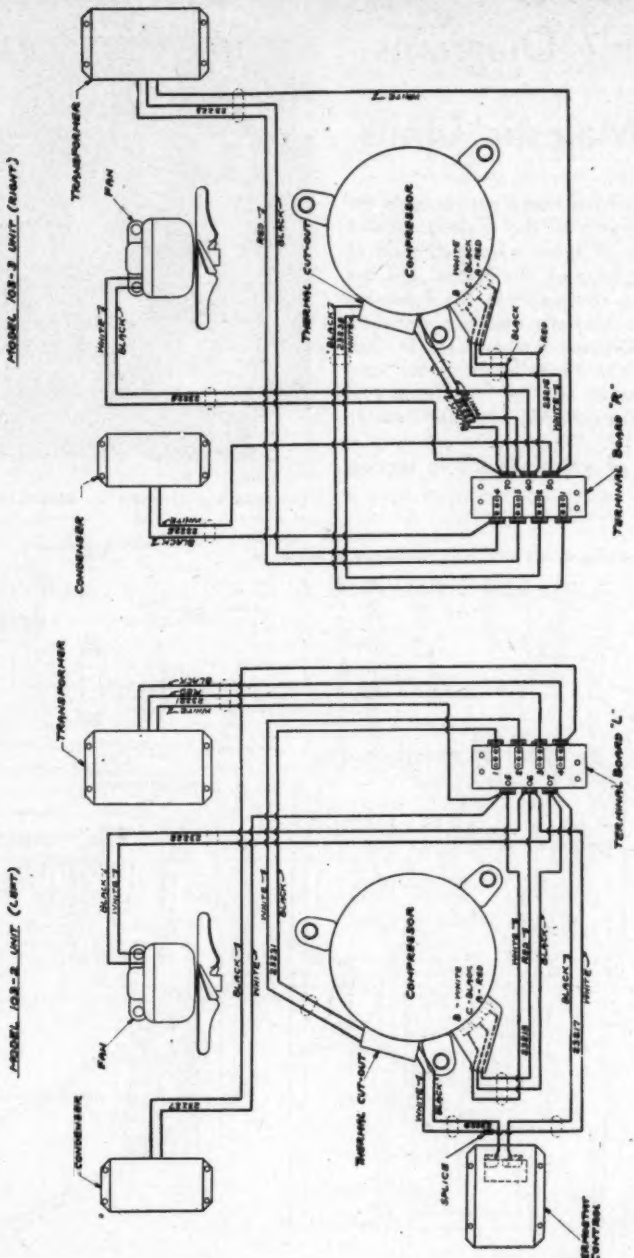
Because of the numerous requests for wiring diagrams on the Majestic sealed units, three of them were published in the August issue of this journal and the balance are contained in the following pages. The Majestic unit was manufactured by Grigsby-Grunow Co. in Chicago. Early in 1934 the company went into bankruptcy and the manufacture of units was discontinued. At that time an estimated 109,000 refrigerators were in use, many of which are still in service.



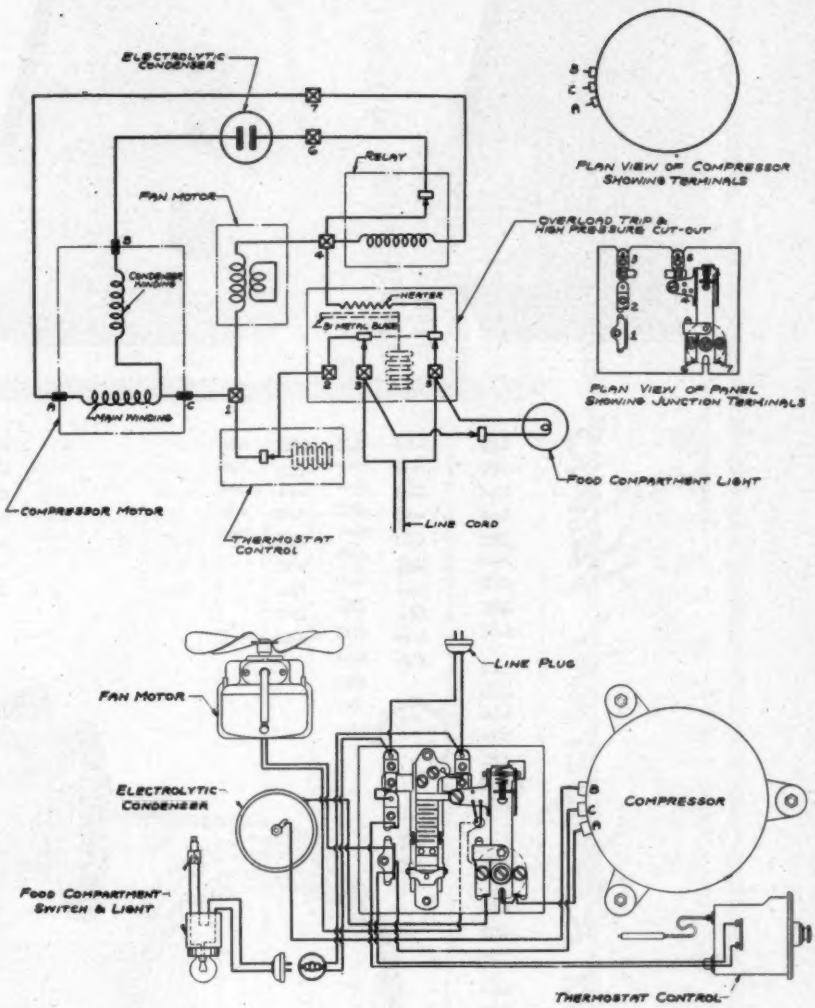
Overload trip assembly for Model 100 unit.



WIRING DIAGRAM FOR 103-2 AND 103-3 MAJESTIC UNIT WITH RELAY.



WIRING DIAGRAMS FOR MAJESTIC MODEL 103-2 AND 103-3 UNITS WITH CONDENSER.



WIRING DIAGRAM FOR MODELS 205-207-209 CONDENSER TYPE, 50-60 CYCLES, 115 VOLT MAJESTIC UNIT.

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EASES THE JOB OF SERVICE ENGINEERS

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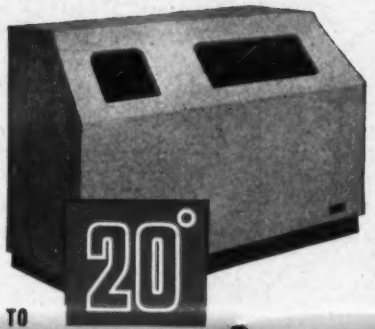
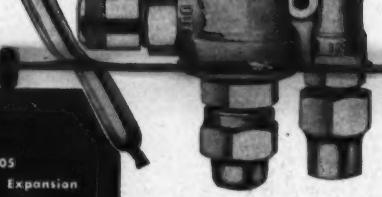
FROM LOW TEMPERATURES



TO COMMERCIAL TEMPERATURES

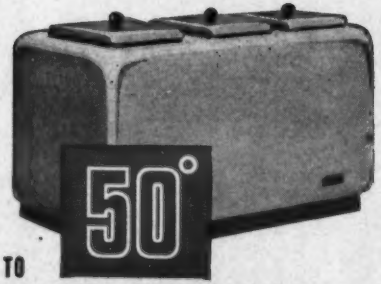


WITHOUT ADJUSTMENT

TO

A-P Model 205 Thermostatic Expansion Valve. Popular for large display cases, walk-in boxes, and other applications up to 2½ tons Freon, and air conditioning capacity up to 3¼ tons Freon.

One Expansion Valve capable of handling Freon Applications ranging from —40° to +50° without further adjustment is important news to any Service Engineer. That's true of all A-P Dependable Freon Thermostatic Expansion Valves —and it means stocking or carrying only one valve of a capacity, whether your installation is low, medium or high suction temperature. One reason for this unusual versatility is the ability of A-P Dependable Expansion Valves to maintain straightline superheat—actually less than ½° variation over an operating range from —30° to +50° F.



TO
AIR CONDITIONING TEMPERATURES

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Frozen Doughs Feature New Frozen Foods Store

By HERBERT HANLEY

REFRIGERATED display of quick-frozen doughs for bread, rolls, pies and other products is the outstanding merchandising feature of the new frozen foods store of Bettendorf Hampton Village Market, St. Louis, Mo.

The frozen foods section, largest complete frozen food store in the midwest, was opened in May of this year, consisting of six 9-foot display cases provided by George Lytle, Inc., refrigeration specialists, laid out in a straight line ending at a wrapping and price-checking station. The cases are entirely self-service and are fitted with a special clear-plastic lid which prevents condensation or other fogging up. Each is divided into a specific bracket of foods. Over the 80-foot length of the cases is a 60-foot white enamel sign which spells out the name "Birdseye" in electric blue neon letters 2½ feet high. The huge sign, elevated 8 feet above the floor, serves to attract customers from every part of the store, according to Joe Bettendorf, veteran operator of the market.

The No. 1 case is devoted to frozen bakery products, which Mr. Bettendorf credits with the fact that sales are now better than $350 per day in the department, as against less than $100 per day in the former smaller installation. "Undoubtedly, the bread shortage was responsible for the tremendous rush we've received," he indicated, "which has produced sales of around 380 two-pound packages of quick frozen bread dough per week, and a commensurate volume of dinner roll doughs. We're also selling out rapidly on frozen fresh fruit pies and other items." The frozen doughs, which account for lines of waiting people at each morning store opening, are produced by American Frigid-Dough, Inc., of Chicago, who cannot begin to supply the demand this St. Louis market has developed.

In the interests of educating customers to using frozen doughs properly, and thus safeguard against mistakes which might set back popularization of this new food field many months, Mr. Bettendorf has adopted a three-point educational plan.

First, the store features a white-uniformed woman demonstrator, Miss Olive Kline, who is on duty each Friday and Saturday to greet frozen foods customers, explain the fundamental steps used in bakery dough making, thawing, and baking, and answer the hundreds of questions which interested housewives are directing at her. Supplied by the frozen foods distributor co-operating, Miss Kline is an expert on every phase of home use of frozen foods, including home freezer and locker plant operation, preparing, blanching, baking and cooking. She distributes literature supplied by the market and co-operating food processors, and thus eliminates in advance any mistakes.

Samples Advertise Product

Second, Bettendorf's has adopted the policy of serving samples of each frozen dough item on Friday and Saturday, using a fortunately already-available kitchen in the market originally set up for providing delicatessen service. Arriving at the market early, she makes several pies, dozens of rolls, bakes several loaves of bread, etc., which are sliced into small sample sizes, and served from novelty trays to customers. "Many women who are a bit dubious about frozen foods in general have become enthusiastic after tasting a strip of blueberry pie or a hot slice of bread prepared from them," Mr. Bettendorf stated, "and in this way, we consider the expense of the sampling program well worth the number of new customers converted to frozen foods."

The frozen bakery products are being widely advertised in a number of St. Louis "neighborhood newspapers" which average far better results than too-general metropolitan papers. Typical newspaper ads show "before and after" cuts of bread in frozen dough and baked loaf form, and invite the housewife to check over the 25 varieties of frozen foods offered in the store, with the idea of serving complete meals from them. Economy and readiness features are stressed with all frozen bakery goods items.

To date the store has gotten along on direct delivery of frozen bakery goods to the display cases, but due to the swift way these sell out daily, has been forced to greet many customers with empty cases. Therefore, the Lytle refrigeration engineers are installing a walk-in cold storage cooler, which will accommodate plenty of frozen bakery goods as well as other frozen foods.

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Because the purity of "Freon" safe refrigerants helps increase both the operating efficiency and the life of the systems in which they are used . . . cylinders and drums of "Freon" are given final tests—a "last look"— before they are approved for shipment.

To guard equipment against the risk of corrosion . . . or the freezing of tubes, valves and other delicate parts of modern, compact machines, every precaution is taken to insure in "Freon" the absolute freedom from harmful impurities.

Throughout the intricate manufacturing process, many laboratory tests are made to control the production of "Freon." These prove "Freon" is free from acids, impurities . . . and almost totally free from moisture (less than 25 parts in a million parts of "Freon"). They prove "Freon" has an extremely narrow boiling point range, a low volume of insoluble gases and, in addition, is non-toxic, non-flammable and non-explosive.

These important characteristics of "Freon" are well understood by refrigerating engineers. They explain why equipment designed to use "Freon" is so often recommended. Free consulting service is offered on any problems concerning the use of "Freon" refrigerants. Address: Kinetic Chemicals, Inc., Tenth and Market Sts., Wilmington, Delaware.

IMPORTANT FEATURES OF "FREON" SAFE REFRIGERANTS

1. Freedom from moisture . . . less than 25 parts per million.
2. Narrow boiling point range—confined within limits of 1/2°C.
3. Less than 2% of insoluble gases in vapor phase.
4. Freedom from acids. There are none in "Freon."
5. Freedom from impurities . . . less than 1/20 of 1%.

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safe refrigerants

"Freon" is Kinetic's registered trade mark for its fluorine refrigerants and propellents

Some displays you will See at the Fourth All Industry Exposition

MORE than 20,000 leaders in the mechanical refrigeration, air conditioning and frozen food industry will gather in Cleveland this fall for the industry's first national exposition of its products in nearly six years.

Opening of the Fourth All-Industry Refrigeration and Air Conditioning Exposition, which will be held in the Cleveland Public Auditorium, October 29 to November 1, will reveal more than 300 exhibits of the industry's newest equipment and latest developments. Every branch of the industry from parts makers to manufacturers of complete refrigeration and air conditioning units will be included among the list of exhibitors. A varied line of allied products used in connection with refrigeration and air conditioning installations also will be well represented among the displays.

Locker Makers Included

The exposition, the first since January, 1941, is sponsored by the Refrigeration Equipment Manufacturers Association, comprising 100 member companies which manufacture all types of refrigeration and air conditioning equipment; with the cooperation of the Frozen Food Locker Manufacturers and Suppliers Association, members of which build and equip frozen food locker plants, now numbering more than 7,000 throughout the country. Cooperation of the latter group is the first time the frozen food equipment industry has participated in an all-industry show on a large scale.

Floor space already reserved for the show is two to three times greater than ever before, assuring that this year's event will be the largest by far in the history of the industry. With requests for space still being received, show managers predict that the total number of exhibits will exceed 300 and fill the 75,000 square feet of space available in four exhibition halls of the huge Cleveland Auditorium.

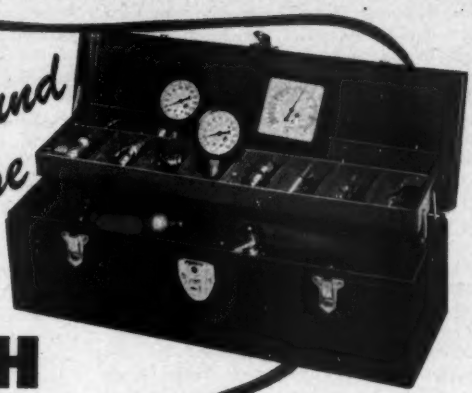
Advance plans of the more than 165 companies already listed among the exhibitors, many of which will have more than one display, indicate that the industry is taking full advantage of its first opportunity since prior to the war to have a complete showing of its products. No phase of the activities of the industry, which now performs more than 200 services, will be neglected.

In the frozen food field alone, exhibitors will show many new types of home freezers, home frozen food storage cabinets and lockers, specially-designed farm freezers, walk-in storage and hardening rooms (some of them prefabricated), the newest develop-

ments in frozen food locker plant construction and equipment, frozen food cabinets for stores, and numerous parts and accessories especially adapted to frozen food equipment use—cold plates, condensing units, controls, freezer trays, fractional horsepower motors and hardware, to name a few.

The latest home refrigerators, many of them equipped with freezing and frozen food storage compartments, will be unveiled. For the commercial preservation of perishable foods there will be new self-service display cases, postwar designs in cold storage equipment, reach-in boxes, and various other types of commercial equipment, including ice cream cabinets, soda fountains and beverage coolers.

You're sure of your ground when you use



MARSH *Instruments*

Marsh Instruments—the heart of the tool kit.

The diagnosis of refrigeration ailments can be no more accurate than the instruments used in making it. In determining the troubles accountable for 95% of all servicing calls, the vital instruments are pressure gauges and thermometers, and the Marsh line offers you these instruments in the most accurate and usable forms.

In the Marsh "Serviceman" you have the handiest servicing thermometer ever developed. Its remote reading feature enables you to make determinations far more accurately than you can make them with a pocket thermometer—enables you to make readings under actual operating conditions with the refrigerator door closed and the indicator outside showing just what's going on at the point of measurement.

Marsh Refrigeration gauges are known for lasting accuracy—the ideal gauges for checking head pressures, suction pressures, and switch settings.

Compound gauge—made in ranges of 30"x15 lbs., 30 lbs., 60 lbs., 100 lbs., 150 lbs., 200 lbs., 300 lbs.

All Marsh Gauges are available with the Marsh "Recalibrator"—the quickest and best means ever developed to restore the accuracy of a thermometer or gauge that has been knocked out of adjustment. The "Recalibrator" is standard in the Marsh "Serviceman" thermometer.

Write for new Refrigeration booklet.

A new 20 page pocket-size booklet covers commonly used Marsh Refrigeration instruments. Where shall we send your copy?

Marsh Serviceman—capillary tubing is neatly coiled in case when not in use.

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MARSH *Refrigeration Instruments*

Exhibits related to the frozen food field will include displays of the latest developments in the packaging field such as liners and overwraps for frozen food processors, locker plants and home use and the newly announced "home freezer kits" for use by housewives doing their own freezing.

Specially designed equipment for locker plants, retail stores and frozen food packers will include new meat, fish and bone cutters and new methods of cold storage construction showing latest steel, composition and wool insulating materials. New refrigerated equipment for milk plants and new milk coolers for farms also will be displayed.

The latest developments in "mobile" mechanical refrigeration equipment for the transportation of fresh and frozen foods also will be featured in the exposition. New mechanical refrigeration units designed for trucks and trailers used in the movement of food will be displayed. The new units, especially engineered to reduce weight and thus increase payload, are capable of maintaining temperatures of 10 degrees above zero when outside temperatures reach 120 degrees above.

Industrial Uses to Be Shown

Industrial applications of mechanical refrigeration also will be well represented among the exposition's exhibits. Increasing use of the principles of mechanical refrigeration for the treatment of steel, shrink fitting of metal parts and testing of various industrial products has opened up an entirely new field for the refrigeration industry.

Another highlight of the exposition will be new water coolers, both unit and remote control types. These products enjoyed rapid development during the war and are far more rugged, compact and efficient than prewar models. The country's leading water cooler manufacturers will have displays.

The air conditioning section of the exposition will be the most complete in the history of the industry and will feature all the advances made by manufacturers in recent years. The industry has boosted its air conditioning production sharply in an effort to meet an estimated billion dollar demand for equipment in this field, and many producers will make introductory showings at the Cleveland exposition.

The air conditioning exhibits will include the newest model space conditioners and window coolers especially designed to control temperatures and humidity in a single room or small space. Other displays will feature complete air conditioning units for homes and apartment buildings. Air conditioning systems for office buildings, factories, hospitals, hotels, theaters, public buildings and other large structures also will be shown.

An interesting phase of the air conditioning displays will show the usefulness of air control equipment in industrial plants. Although primarily regarded as a comfort factor, many manufacturers have discovered that modern air conditioning actually is a useful industrial tool.

A watch manufacturer, for instance, has found that air conditioning reduces production costs by eliminating damage caused by dirt, dust, and excessive humidity which effect delicate machinery and precision instruments. A shoe manufacturer now uses conditioned air to speed the drying time of leather. A printing company has reduced spoilage losses in lithograph paper and plates through installation of a modern air conditioning system. Bakeries have cut the drying time for icings on cakes and cookies by installing air conditioning. Candy manufacturers and food processing plants have discovered that air conditioning, in addition to improving the efficiency of their employees, also keeps the air free of dirt and foreign matter which might contaminate their products.

The complete roster of exhibitors so far reveals practically all the "big name" makers of complete units in the industry, many manufacturers of specialized equipment, parts and chemical manufacturers, and, in addition, producers of a varied line of products used in connection with refrigeration and air conditioning installations. The show is open to the entire industry, membership in the two sponsoring associations not being a requirement for exhibitors.

During the week of the show, associations of wholesalers, service engineers, contractors and frozen food locker operators will hold meetings in Cleveland to give their members full opportunity to review the advances made by the industry which will be displayed at the exposition. Invitations to the exposition also have been extended to all business and professional personnel identified or allied with the industry. The show will be open to the public from 7 to 10 P.M., Thursday, October 31.

All-Industry exposition headquarters are at 1107 Clark Building, Pittsburgh, Pa. R. Kennedy Hanson, executive secretary of the Refrigeration Equipment Manufacturers Association, is show director.

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HORIZONTAL REFRIGERANT PASSAGES AND UNIVERSAL MOUNTING BRACKETS INCREASES THEIR

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SEE US AT THE SHOW . . . BOOTH NO. 509

Standard Refrigeration Co.

20 North Wacker Drive **Chicago 6, Illinois**

REMA ACCEPTS 100TH MEMBER

A YEAR ago August 15, directors of the Refrigeration Equipment Manufacturers Association met in Marinette, Wisc., to observe the 10th anniversary of the group and wound up by celebrating the surrender of Japan.

This year at their annual midsummer meeting August 15, the directors had still another reason for enthusiasm. It was the announcement by H. F. Spoehrer of St. Louis, president, that membership in the organization now has passed the 100-mark.

The 100th company, voted into the membership at the meeting, is Drayer-Hanson, Inc., Los Angeles, manufacturers of heat transfer equipment. During the last three years, REMA has more than doubled in size, and now is the largest association of manufacturers in the mechanical refrigeration and air conditioning industry. Members include producers of all types of parts and chemicals as well as complete units and systems.

Growth Credited to Activities

In a statement to the directors, Mr. Spoehrer credited the growth in the association to its various overall and product section activities and to its cooperation with other associations in the industry. He cited the REMA public relations program, efforts in working with the OPA, "which have brought about the decontrolling of our industry," cooperation with the National Bureau of Standards in building commercial standards for the industry's products, and the forthcoming All-Industry Refrigeration and Air Conditioning Exposition in the Cleveland Public Auditorium this fall as "clear-cut indications of the steady and very thorough growth of REMA."

Associations with which REMA cooperates include the American Society of Refrigerating Engineers, Refrigeration Equipment Wholesalers Association, Refrigeration Service Engineers Society, and the newly-formed National Association of Refrigeration Contractors. Cooperating with REMA in the All-Industry show, Oct. 29 to Nov. 1, is the Frozen Food Locker Manufacturers and Suppliers Association. More than 165 companies already have contracted for exhibition space, the event being open to manufacturers throughout the industry regardless of association affiliations.

Headquarters of REMA are in Pittsburgh. R. Kennedy Hanson, executive secretary, also is acting as show director.

REFRIGERATION AND AIR CONDITIONING MARKET STUDIES BEGUN

MARKET studies of important industries to determine the potential requirements for refrigeration and air conditioning equipment will be undertaken by the Air Conditioning and Refrigerating Machinery Association, representing many of the larger manufacturers of air conditioning and refrigerating equipment.

Announcement of the establishment of the research and statistical department to conduct this work was made by William B. Henderson, executive vice president of the association. The object of the department will be to maintain current information on the rapidly expanding use of refrigeration and air conditioning machinery and to conduct special studies by assembling, collating and analyzing all available data bearing on the use of the probable new demands for refrigeration and air conditioning machinery.

Early attention will be given by the new department to a survey of the food industry, one of the largest users of refrigerating and air conditioning equipment. The first phase of this work, which is already under way, deals with the dairy industry and its sales potential for refrigeration equipment. A part of this study dealing with dairy farming already has been completed. The work will be carried on to supplement market research activities of member companies for advertising guidance, and to provide a source for public information about the increasing use of refrigeration and air conditioning equipment for production purposes by other industries. The industry has lacked statistical data, especially relating to the use of air conditioning, due to its rapid growth in the period just prior to the war.

PREFERENCE RATINGS

THE Civilian Production Administration issues or authorizes the issuance of four types of ratings as well as certain kinds of directions, directives and urgency certificates.

These instruments are used primarily to help producers of certain critical products, to aid business in general and to operate up to a break-even level, and to give assistance to various "special cases." They are based on authority given to CPA by the Second War Powers Act.

The ratings, in the order of their precedence, are AAA, MM, CC and HH. The

NU-COIL

SCALE SOLVENT

OFFERS IMMEDIATE RELIEF TO REFRIGERATOR EQUIPMENT WITH LOW EFFICIENCY AND HIGH OPERATING COST. NU-COIL RESULTS ARE SURPRISINGLY LOW IN COST AND OFTEN THE SAVING IN ELECTRIC CURRENT ALONE PAYS FOR THE DESCALING OF COILS.

FOR

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SKASOL CORPORATION

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last two (CC and HH) are of equal priority standing.

The AAA rating, sole remaining civilian rating used during the war by the War Production Board, predecessor of CPA, takes precedence over all other ratings. It is only used in the most urgent situations with the concurrent sponsorship of the CPA industry divisions and bureaus concerned.

More or less interchangeable with the AAA rating is a directive, which may be issued by the Special Assistance Division under somewhat the same conditions as the AAA rating. There are these differences, however: an AAA rating is extendable by the producer for materials necessary to fill the order; a directive is not. An extendable rating is one which, when it is served on a manufacturer, may be used by him to buy his production materials. He is not permitted to do this in the case of a non-extendable rating. An AAA rating is a broad general order on a specific manufacturer for the material or equipment needed. A directive orders a specific manufacturer to deliver certain specified material or equipment to a named individual.

The MM or military rating (also extendable) can be assigned by the Army and Navy and other military and governmental agencies under the provisions of Directive 41.

Bottle-neck Breaker

The CC rating is assigned by CPA under the terms of Priorities Regulations 28 and 28A. PR-28, known as the "bottle-neck breaker," is the instrument by which CPA may generally help a manufacturer to secure some particular piece of equipment or some certain material for lack of which he is unable to start production or expand it to his minimum economic rate.

Special consideration in assigning CC ratings, for items not properly bottleneck items, is given to the needs of small business and to World War II veterans who are starting a business.

PR-28A provides CC rating assistance for individual concerns in the textile field.

The HH rating (used only in connection with housing, primarily for veterans) is granted by Federal Public Housing Authority and Federal Housing Administration under authority delegated to them by the National Housing Agency which, in turn, receives its authority from CPA. It presently covers eighteen different building materials, all in short supply, as listed in Schedule A to Priorities Regulation 33, which is the regulation designed to provide moderate-cost housing for veterans. It is generally granted only to those who agree to sell or rent the resulting dwellings at or below certain maximum prices, and to give veterans preference during the period of construction and for thirty days thereafter.

Application forms CPA-4425 are obtainable from the CPA in Washington or at the CPA district construction offices in the field. Application forms CPA-541A are obtainable from the CPA in Washington, from all CPA field offices and from about 150 first class United States post offices. All such applications should be sent directly to the CPA Washington office, where they are processed.

PRICE OF REFRIGERATORS TO INCREASE

PRICE increases were granted on such articles as radios, stoves, washing machines, vacuum cleaners, toasters and irons. The increases, according to OPA were required by the new price control law which specifies that wholesalers and retailers profits must not be cut below margins of March 31. Items affected are those on which dealers had been required to absorb part of increases granted to manufacturers.

Price increases granted thus far range from 3 to 12 percent with refrigerators being boosted 6 percent.

DOWN TO BUSINESS

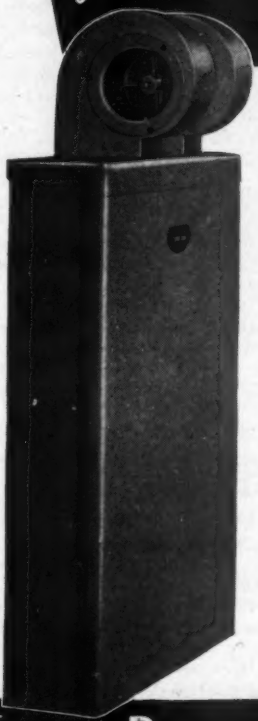
(Continued from page 29)

chore. Some far-seeing service shop owners have found it paid to call on a bookkeeper to give them suggestions when they first start out. How about you?

Remember that whether or not you operate on a strictly cash basis or offer credit to certain of your customers, your *real* earnings, your net profits, are seldom measurable in terms of your bank balance. It's not as simple as that.

Next issue we'll see if it pays to permit on-the-cuff business to cross your desk. Where are you going to draw the line? How are you going to handle collecting problems? Many service shop owners quickly lose faith in humanity and in their own businesses when they find they are making bad guesses on the financial status of their credit customers. How can you avoid bad guessing? How can you avoid guessing? We'll answer these questions next month—and maybe, too, we'll meet you at the All-Industry Convention in Cleveland. You are going, aren't you?

Filterpure for Dough Retarders with Air Purification



Check These Features

- ★ Designed especially for Dough Retarders—For installation behind the Mullion
- ★ Coil and air circulation scientifically balanced to provide humidity in excess of 85% at 35° box temperature
- ★ Complete air purification
- ★ Centrifugal blower circulation
- ★ Vertical air discharge through concealed drip pan
- ★ Baked enamel finish . . . on rustproofed steel

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LEADING REFRIGERATION WHOLESALERS

BETZ CORPORATION
HAMMOND, INDIANA

Refrigeration Service Engineers Society

Official Announcements of the activities of the International Society and Local Chapters appear in this department as well as articles pertaining to the educational work of the Society.

INTERNATIONAL HEADQUARTERS:
433-435 North Waller Ave., Chicago 44, Ill.

COMING CONVENTIONS

RSES Convention

Place: Hollenden Hotel.
City: Cleveland, Ohio.
Date: October 26, 27, 28, 29, 1946.
Secretary: H. T. McDermott, 433 N. Waller Ave., Chicago 44, Ill.

All Industry Exhibition:

Place: Cleveland Public Auditorium.
City: Cleveland, Ohio.
Date: October 28, 29, 30, 31, 1946.
Exec. Secretary: R. Kennedy Hanson, 1107 Clark Bldg., Pittsburgh, Pa.

Illinois State Association

Place: Stevens Hotel.
City: Chicago, Ill.
Date: September 21, 22, 1946.
Secretary: R. E. Saunders, 730 Towanda, R.F.D. 1, Bloomington, Illinois.

Alabama State Meeting

Place: Whitley Hotel.
City: Montgomery, Alabama.
Date: December 2, 3.
Secretary: W. C. Goodwin, 14 Country Club Drive, Montgomery, Alabama.

New England State Meeting

City: Providence, Rhode Island.
Date: Sunday, November 17.
Secretary: Lee J. Wallace, 29 Cave St., New Haven, Conn.

MIAMI CHAPTER BEREAVEMENTS

MEMBERS of the Miami Chapter are mourning the passing away of one of their active members, Victor Marakis, owner of the Modern Refrigeration and Air Conditioning Co. of 1007 Fifth St., Miami Beach, Florida. Mr. Marakis was fatally injured in an auto accident while returning from a vacation in Tennessee, and died August 5. He is survived by his wife, Ruth, now in the hospital with a broken ankle and other injuries, and two children.

Regrets and sympathy are being extended to another of their members, James M. Chauncey, whose wife, Ruth, died after a prolonged illness July 15.

TWIN CITIES CHAPTER PICNIC

TWIN CITIES CHAPTER picnic was held Sunday, July 21st at Bass Lake with about 600 in attendance. Sponsored by both the Twin Cities Chapter and Ladies Auxiliary, the picnic was highly successful. The day started with a ball game at 10 A.M. continuing until almost noon when coffee, ice cream and other refreshments were made available to the visitors. Shortly after lunch there was an introductory speech by Lester A. Ost and the balance of the afternoon was devoted to prize contests which included events for boys, girls and tiny tots, ladies and the men. Coffee and other refreshments were again served in the evening and prize drawings were made about 6:30 P.M. The evening was spent in dancing and at 10:30 P.M. a Grand Prize drawing took place.

H. GOLDBERG'S ANNUAL PARTY SEPTEMBER 21

HERMAN GOLDBERG announces his tenth annual party will be held September 21, 1946, in conjunction with the Illinois RSES Convention.

The North Ballroom and North Assembly Room at the Stevens Hotel has been engaged for the party. The party will be held in traditional Herman Goldberg style with an outstanding floor show procured from Chicago theatrical attractions. A leading orchestra will be present for dancing. Jimmy Costello, radio headliner, will be Master of Ceremonies and will conduct his usual audience participation show.

Herman has provided gifts galore and a good time is assured for everyone.

Wire PEERLESS for *Fast Delivery!*

● One week delivery on PEERLESS Flash Coolers! That's a dream come true, made possible by the speed and thoroughness of our reconversion program. It's not only true of Flash Coolers, but also of Ice Cube Makers and Fin Coils. Better still, PEERLESS can now give immediate delivery on Expansion Valves and Capacity Boosters.

These products are all engineered to give the superior service which will make your installations make more customers for you. Think of PEERLESS and fast delivery when you need products in the refrigeration field.

SOLD THROUGH LEADING REFRIGERATION SUPPLY WHOLESALERS

FLASH COOLER

● PEERLESS Flash Coolers reduce operating costs through increased natural convection, circulating air for maximum efficiency in food preservation. Through highly polished aluminum louvres a constant volume of high humidity air drifts gently downward over stored products. Completely non-ferrous, having aluminum pans, hangers, fins, end plates, and electro tin-plated copper tubing, the PEERLESS Flash Cooler is a complete unit, quickly and easily installed.

PEERLESS of AMERICA, Inc.
333 N. Michigan Ave. Chicago 1, Illinois, U.S.A.

Cleveland Set for Big Convention of Service Engineers

Large Attendance Expected To Hear Leading Industry Authorities On Important Subjects In First Post-War Meeting

CLEVELAND, October 26 to 29, will be the congregating point for service engineers from all points in the United States and Canada, followed by the All-Industry Refrigeration and Air Conditioning Exhibition October 29 to November 1. With other participating associations, it is expected that Cleveland will attract the largest group of people ever assembled in a city interested in refrigeration and its many applications.

Advance reservations indicate the importance attached to the Refrigeration Service Engineers Society Convention and All-Industry Exhibition.

Full Three-Day Educational Program

Three days have been set aside for the educational program of the RSES. These three days will be packed with educational talks providing the type of information that the service engineer is anxious to secure. A. M. Fenwick, Cleveland, Chairman, and Paul Reed, Milwaukee, International Education Committee, have arranged an outstanding program consisting of top leaders in their respective fields. Speakers and subjects on the "all-star" program will include:

★ Things We Need to Know About Foods, by Dr. H. C. Diehl, Director, Refrigeration Research Foundation, Berkeley, Calif.

★ The Refrigeration Service Engineer's Place in the Industry, by H. F. Hildreth, Mgr. Refrigeration Specialties Dept., Westinghouse Electric Corp., Springfield, Mass.

★ Responsibilities of Servicing Equipment in the Low Temperature Field, by E. T. Benson, Frigidaire Corp., Dayton, Ohio.

★ Two-Temperature Applications, by R. W. Ayres, Chief Engineer, Coolerator Co., Duluth, Minn.

REFRIGERATION SERVICE ENGINEERS SOCIETY

HOTEL HOLLENDEN · *OCT. 26, 27, 28, 29*

★ Financing Your Business, by W. C. Irving, Santa Monica, Calif.

★ Problems in Shaft Sealing, by Willis Stafford, Chicago Seal Company, Chicago.

★ The RSES Looks Ahead, by Paul B. Reed, Milwaukee.

★ A Modern Service Repair Shop, by V. R. Kruse, Woodstock, Ill.

★ Modernization and Replacement of Obsolete Equipment.

★ Hermetic Units and the Service Engineer.

★ Prevention Maintenance for Air Conditioning Equipment.

★ Servicing Ammonia Equipment.

★ Protecting Your Business by Insurance.

Included in the educational program will be moving pictures on processing frozen foods, repairing and servicing refrigeration equipment, etc.

Sunday Luncheon Session

Following the morning's educational program a luncheon will be held featuring a prominent national speaker. Those attending the Convention will not want to miss this important feature. The ladies are invited, too.

Saturday Evening Get-Acquainted Party

The Cleveland Convention Committee has been busily engaged in arranging for the entertainment features of the Ninth Annual RSES Convention, and Saturday evening

Yes, we put it in UPSIDE DOWN and so can you— on any installation

For Quicker, Easier Installations Rely on the TENNEY TS-1 Thermostatic Expansion Valve

Has No Feeler Bulb

The first time you pick up a Tenney TS-1 Valve, note the sturdy, **compact** design. And note also that it has **no feeler bulb** to confuse you and waste your time. You can install it in any position and in any location with the assurance it will work to **your** satisfaction and that of your customer. Just couple it in and operate.

Some additional qualities you will find in a Tenney TS-1:

Instant response to suction vapor conditions—Extremely close super heat control—No push pin packing required—Complete absence of time lag in control—Only one valve needed for most applications—Valve is not affected by box temperature, entering warm air, or warm suction lines—Responds instantly to both temperature and pressure.

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Manufacturers of Automatic Temperature, Humidity and Pressure Control Equipment

will feature a Get-Acquainted Party. This is a time when old acquaintances are renewed and new friends are made, which has always been an important part of RSES convention activities.

Monday Evening Annual Banquet

The Society's Annual Banquet provides suitable relaxation from the busy educational programs and Monday evening will feature the Ninth Annual RSES Banquet. An orchestra will provide music until a late hour and the entertainment will provide the enjoyment for the lighter side of life.

Tours of Plants

One of the highlights of the tours arranged for the visiting members and their guests will be a trip to the National Aeronautical Laboratory, maintained by the Government for the testing and development of the latest equipment in airplanes. The number of guests than can be accommodated is limited and accordingly alternate tours have been arranged to visit other manufacturers' plants engaged in the production of equipment and parts used in refrigeration.

Ladies Auxiliary

Meetings and entertainment features of the RSES Auxiliary are being planned by Mrs. Glen Dresback, Bloomington, Ill., President of the Auxiliary. Officers of the Auxiliary include: Mrs. R. C. McCarthy, Rockford, Ill., First Vice-president; Mrs. A. W. Gruber, Ironton, Ohio, Second Vice-president; Mrs. A. W. Overman, Rockford, Ill., Secretary; Mrs. Weldon Andrews, Syracuse, N. Y., Treasurer; Mrs. John K. Bush, Lockport, N. Y., Sergeant-at-arms.

ILLINOIS STATE 9TH ANNUAL MEETING SEPTEMBER 21-22

ALL roads in Illinois and neighboring states point to the Stevens Hotel in Chicago where the refrigeration industry is invited to attend the Ninth Annual Convention of the Illinois State Association of the Refrigeration Service Engineers Society, Saturday and Sunday, September 21-22. Plans are complete for a most enjoyable two-day program which includes both educational features and entertainment.

Make Your Reservation Early

For those who plan on arriving early the registration booth will be open on Friday evening, Sept. 20, and there will be an informal get-together in the West Ballroom. A discussion program will be led by Paul Reed, International Educational Director. The program for the next two days follows:

Saturday Morning

9:00 A. M.—Registration, Third Floor Corridor.

10:30 A. M.—Opening of Convention Call to Order, Pres. Wm. C. Metcalf in North Ballroom.
Secretary's & Treasurer's Report.
Appointment of Nominating & Auditing Committee.
Appointment of Resolutions Committee.

Saturday Afternoon

1:30 P. M.—Jobber - Serviceman Relationship, Jack Glass, Pres. Midwest Jobbers.

2:00 P. M.—Low Temperature Expansion Valve Problems, by F. Y. Carter, Detroit Lub. Co.

2:30 P. M.—Annual Business Meeting.

3:15 P. M.—Shall the RSES Broaden Its Scope, An enlightening discussion to show what the RSES can do for the entire refrigeration service industry, conducted by Herman Goldberg.

4:30 P. M.—Adjournment.

Saturday Evening

6:00 P. M.—Annual Banquet in Tower Ballroom, 29th Flr. (overlooking the lake).
Introduction of Officers.
Speaker, H. T. McDermott.
Roving Entertainment courtesy Herman Goldberg Co.

Following the Banquet we are all invited to attend Herman Goldberg's party in the North Ballroom.

Sunday Morning

9:30 A. M.—Installation of New Officers.

10:00 A. M.—Efficient Air Conditioning Service, M. B. Goddard, Carrier Corp., Chicago.

10:30 A. M.—Getting Down to Business, Waylan Clark, Utilities Engineering Institute.

11:00 A. M.—Unfinished Business.
Resolutions Committee Report.
Consideration of Next Convention City.

WHY PENN VALVES ARE DIFFERENT & BETTER

PENN
No Sticking of Seats
No Rusting of Range Springs
No Water Hammer
No Rust, Corrosion or Sedimentation because Sliding Parts Are Never Submerged in Water
No Need for Lubrication
No Drain Plug

PENN Water Valves for refrigeration applications are built in two styles—flanged and threaded—in a wide range of sizes from ¼" to 2½". Send today for your copy of Bulletin R-1686A.

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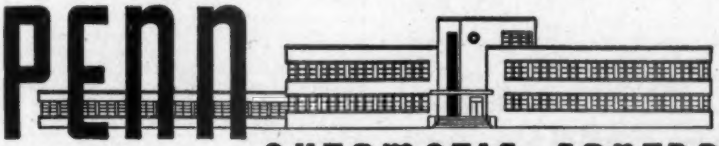

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

Educational Sound Films Schedule of Showings

UNDER the supervision of the International Educational Committee, a set of 16 sound films, grouped into 12 showings and accompanied by a set of slides, are being circulated among chapters as a part of their educational program. Films are all of a practical nature on servicing refrigerating systems. Titles of the films and their identifying numbers and the schedule of showings are listed.

Film Titles and Key Numbers

No.	TITLE
360	Principles of Refrigeration
438	Checking The System—Part I
439	Checking The System—Part II
440	Locating and Repairing Leaks
441	Adding or Removing Refrigerant
442	Removing and Installing A Compressor or Condenser
443	Removing and Installing A Cooling Unit
444	Adjusting and Checking The Expansion Valve
445	Checking and Replacing A Float Valve
446	Checking The Electrical System
447	Quieting A Noisy Refrigerator
448	Adjusting and Repairing The Thermo-Expansion Valve
451	Servicing Water Cooled Condensers
449	Adjusting Pressure Actuated Temperature Controls
450	Adjusting Commercial Thermostatic Controls
452	Making and Repairing Tubing Connections

SCHEDULE OF SHOWINGS

AKRON, OHIO—Akron Chapter: October 9, No. 448-451. Contact Claude L. Wall, 23 Grand Ave., Akron 2, Ohio.

AURORA-ELGIN-JOLIET, ILL.—Tri County Chapter: September 21, No. 444. Contact William J. McCarley, 607 N. Center St., Joliet, Ill.

BATON ROUGE, LA.—Louisiana Chapter: October 4, No. 445. Contact A. E. Kaiser, Sr., Acme Refrigeration Service Co., 1670 North St., Baton Rouge, La.

BIRMINGHAM, ALA.—Birmingham Chapter: September 18, No. 440-441. Contact C. S. Tucker, 2405 12th Ave. N., Birmingham, Ala.

BLOOMINGTON, ILL.—Corn Belt Chapter: October 9, No. 452. Contact Harold Mason, 306 W. Wood St., Bloomington, Ill.

CHARLESTON, W. VA.—Charleston Chapter: October 8, No. 444. Contact H. G. Frame, 1105 Washington St. W., Charleston 2, W. Va.

CHICAGO, ILL.—Chicago Chapter: October 8, No. 446. Contact D. D. Orr, 332 S. Hoyne Ave., Chicago, Ill.

CLEVELAND, OHIO—Cleveland Chapter: October 8, No. 438-439. Contact Robert Whitney, c/o Williams & Co., 3700 Perkins Ave., Cleveland 14, Ohio.

COLUMBUS OHIO—Columbus Chapter: October 9, No. 446. Contact H. Grossman, 22 W. Naghten St., Columbus, Ohio.

DAVENPORT, IOWA—Mississippi Valley Chapter: October 1, No. 447. Contact J. Vinje, 529 W. Second St., Davenport, Iowa.

DAYTON, OHIO—Dayton Chapter: October 10, No. 447. Contact R. E. Warner, c/o Allied Supply Co., 359 W. Monument Ave., Dayton, Ohio.

DENVER, COLO.—Mile High Chapter: September 16, No. 445. Contact R. C. Kimmel, 1524 15th St., Denver 17, Colo.

DULUTH, MINN.—Head of the Lakes Chapter: October 7, No. 360. Contact C. A. McCafferty, 7 N. 20th Ave. W., Duluth, Minn.

DUBUQUE, IOWA—Key City Chapter: October 2, No. 446. Contact R. E. Mueller, Stampfer Farm & Home Store, 7th & Iowa, Dubuque, Iowa.

EVANSVILLE, IND.—Evansville Chapter: September 26, No. 444. Contact C. E. Goad, 11 Main St., Evansville, Ind.

FLINT, MICH.—Motor City Chapter: October 8, No. 438-439. Contact Wilbur Henderson, 3305 Gratiot, Flint 3, Mich.

FORT WORTH, TEXAS—Cow Town Chapter: October 10, No. 444. Contact P. D. Cato, Texas Refn. Supply Co., 1410 Commerce St., Fort Worth, Texas.

FRESNO, CALIF.—Fresno Chapter: October 10, No. 442. Contact N. N. Leas, c/o Cond. Air & Refn. Co., 249 N. H St., Fresno 3, Calif.

GRAND RAPIDS, MICH.—Furniture City Chapter: October 1, No. 446. Contact M. D. Thiebout, c/o Consumers Power Co., 450 Market St. S. W., Grand Rapids, Mich.

HARTFORD, CONN.—Central Conn. Chapter: September 30, No. 440-441. Contact Stanley N. Baldwin, c/o Joseph Simons Co., 271 Sheldon St., Hartford, Conn.

HUNTINGTON, W. VA.—Tri State Chapter: October 8, No. 445. Contact A. W. Albertsen, 314 Eleventh St., Huntington 14, W. Va.

JACKSON, MISS.—Magnolia Chapter: September 25, No. 438-439. Contact A. E. Shafer, P.O. Box 1509, Jackson 112, Miss.

KANSAS CITY, MO.—Kansas City Chapter: October 2, No. 447. Contact C. R. Visger, 7715 Brooklyn, Kansas City, Mo.

LA CROSSE, WIS.—La Cross Chapter: October 4, No. 360. Contact George Brenstein, 408 Copeland Ave., La Crosse, Wis.

LANSING, MICH.—Wolverine Chapter: September 23, No. 446. Contact R. Kellogg, 616 Jessop Ave., Lansing, Mich.

LIMA, OHIO—Lima Chapter: September 19, No. 360. October 17, No. 442. Contact Allied Supply Co., Attn. Dan Shively, 122 S. Union St., Lima, Ohio.

LOGAN, UTAH—Utah Aggie Chapter: October 2, No. 440-441. Contact J. Cecil Sharp, c/o Utah State Agricultural College, Logan, Utah.

LONG BEACH, CALIF.—Long Beach Chapter: October 9, No. 443. Contact Van's Supply, 250 E. 12th St., Long Beach, Calif.

LOS ANGELES, CALIF.—Los Angeles Chapter: September 25, No. 442. Contact Merle F. Stutzman, 3464 W. First St., Los Angeles 4, Calif.

LOUISVILLE, KY.—Colonels Chapter: September 19, No. 446. Contact J. M. Berry, c/o F. H. Lagsenkamp Co., 339 W. Main St., Louisville, 2, Ky.

MADISON, WIS.—Madison Chapter: October 10, No. 447. Contact Refrigeration Maintenance Corp., Attn. Lee A. Miles, 731 University Ave., Madison 5, Wis.

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COLDSPOT VANES

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NEW! 1½" SIZE

BETTER! 1¼" SIZE

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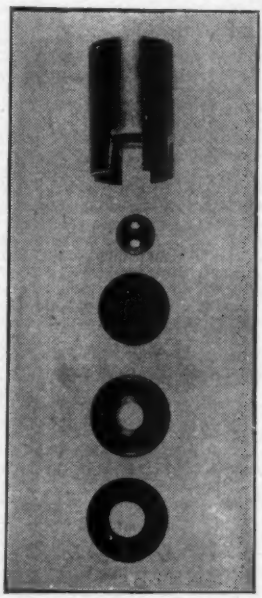

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5 MINUTES TO INSTALL
NO FLARING
NO CUTTING

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MIAMI, FLA.—Greater Miami Chapter: September 26, No. 443. Contact Orville W. Brown, 1044 N.W. 65th St., Miami 38, Fla.
MONTEREY, CALIF.—Monterey County Chapter: October 9, No. 440-441. Contact Robert Hall, c/o Tice Electric Co., 500 Del Monte Ave., Monterey, Calif.
MONTGOMERY, ALA.—Montgomery Chapter: September 16, No. 444. Contact W. C. Goodwin, 8 Forest Ave., Montgomery, Ala.
NEW HAVEN, CONN.—Elm City Chapter: October 4, No. 444. Contact T. B. Howell, United Illuminating Co., 221 George St., New Haven, Conn.
OMAHA, NEBR.—Missouri Valley Chapter: September 19, No. 442. October 17, No. 443. Contact C. M. Flohr, c/o United Motors Serv., 27th Ave. & Harney St., Omaha, Nebr.
PEORIA, ILL.—Illinois Valley Chapter: October 11, No. 443. Contact Bryson Roth, 300 S. Washington St., Peoria, Ill.
PORTLAND, ORE.—Multnomah Chapter: September 19, No. 440-441. Contact Wayne C. Miller, c/o Minneapolis-Honeywell Regulator Co., 122 N.E. Broadway, Portland, Ore.
READING, PA.—Reading Chapter: September 17, No. 443. October 15, No. 444. Contact O. A. Larson, c/o Larson Supply Co., 326 Buttonwood St., Reading, Pa.
ROCKFORD, ILL.—Rockford Chapter: September 16, No. 446. Contact L. L. Sturch, 1915 Vernon St., Rockford, Ill.
SACRAMENTO, CALIF.—Sacramento Valley Chapter: October 3, No. 443. Contact George M. Bale, c/o Assoc. Refr. & Equip. Co., 1717 Eye St., Sacramento 14, Calif.
ST. PETERSBURG, FLA.—Sunshine City Chapter: October 1, No. 442. Contact R. B. Schroeder, Florida Power Corp., St. Petersburg 1, Fla.
SALT LAKE CITY, UTAH.—Beehive Chapter: September 27, No. 448-451. Contact W. W. Walker, c/o G. E. Supply Corp., 310 W 2nd South St., Salt Lake City, Utah.
SAN DIEGO, CALIF.—San Diego Chapter: September 19, No. 442. Contact C. E. Anderson, 209 West E St., San Diego 1, Calif.
SAN FRANCISCO, CALIF. Golden Gate Chapter: September 26, No. 440-441. Contact Ray Winther Co., Attn. George N. Eskra, 1245 Folsom St., San Francisco 3, Calif.
SANTA ANA, CALIF.—Orange County Chapter: September 19, No. 438-439. Contact R. L. McCain, 615 E. Bishop St., Santa Ana, Calif.
SCRANTON, PA.—Scranton Chapter: October 2, No. 440-441. Contact W. D. Franklin, 1632 Sanderson Ave., Scranton 9, Pa.
SPRINGFIELD, MASS.—Western Massachusetts Chapter: September 24, No. 443. Contact Harold C. Lambert, Room 449, 31 Elm St., Springfield 3, Mass.
SPRINGFIELD, MO.—Springfield Missouri Chapter: September 25, No. 360. Contact Harry G. Hoffman, Hoffman Supply Co., 810 Boonville Ave., Springfield, Mo.
TOLEDO, OHIO—Greater Toledo Chapter: October 9, No. 442. Contact Paul D. Sizer, P.O. Box 69, 1216 Adams St., Toledo, Ohio.
TRENTON, N.J.—Trenton Chapter: October 16, No. 360. Contact Harry H. Jaeger, 216 S. Warren St., Trenton, N.J.
TULSA, OKLA.—Oil Capital Chapter: September 25, No. 446. Contact K. G. Wight, c/o K & M Supply Co., 209 N. Denver, Tulsa 3, Okla.
WATERLOO, IOWA.—Cedar Valley Chapter: September 25, No. 449-450. Contact J. Adams, c/o Herbert Refr., 710 Lafayette St., Waterloo, Iowa.
WILKES-BARRE, PA.—Wyoming Valley Chapter: October 14, No. 440-441. Contact A. Reese, 104 Slocum St., Forty Fort, Pa.

* * *

R. S. E. S. Chapter Notes

● GOLDEN GATE CHAPTER, *San Francisco, Calif., July 25*—The newly elected officers were installed in office at this time. They are: Larry Jensen, *President;* La Monte Foster, *1st Vice-president;* Rowland Cooke, *2nd Vice-president;* Ted Smell, *Secretary;* Joseph Speciale, *Asst. Secretary;* Arthur Frazier, *Treasurer;* A. R. Oakley, *Sergeant-at-Arms.*

A permanent meeting place has been secured by the chapter in the Green Room of the Furniture Exchange Bldg., 1345 Market Street. The location offers comfortable surroundings which should attract better attendance in the future. On the educational program the first film provided by the National Society entitled "Principles of Refrigeration" was shown.

● LACROSSE CHAPTER, *LaCrosse, Wis., July 5*—The meeting was devoted entirely to business matters during which various committees reported on progress and final arrangements were made for the charter presentation meeting. A suggestion that members be assessed once a month for money used in entertainments was discussed but no action taken. A chapter constitution came in for an oral review and some minor change suggested. The possibility of holding a picnic within the future was referred to the Entertainment Committee.

July 25—Members, wives and guests totaling forty in all enjoyed a good chicken dinner in the private dining room. After the dinner, President Sargent called the meeting to order. Regular business was dispersed with and after a few announcements regarding the August 2nd meeting of the chapter, President Sargent introduced A. L. Robertson, President of the Wisconsin State Association who gave a short congratulatory talk. Pres. Sargent then introduced Clarence Buschkopf, Acting International President, who presented the charter to Pres. Sargent and the chapter, and then presented the members with membership cards and certificates. Mr. Buschkopf stressed the necessity of membership participation in chapter activities and meeting attendance to insure a permanently active chapter. He also indicated the necessity of well-planned meetings to hold the interest of the membership. The meeting ended with informal discussion and visiting between members, friends and wives.

● LAKE CHARLES CHAPTER, *Lake Charles, La.*—New officers have been elected by the chapter as follows: John Carlberg, *President;* Wayne E. Davis, *Vice-president;* Lyle W. Guth, *Secretary-Treasurer.* Several meetings have been held by the chapter, which is in the organizational stage and plans are on foot at present to arrange for charter presentation within the near future.

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230 SELECTED SERVICE "KINKS"

Practical Ideas for Shop and Field Service

—here for the first time in handy book form—is a collection of over 230 practical, workable refrigeration service pointers. Any one idea used will more than pay, many times over, the small cost of $1.50.

• Service engineers have constantly sought this information. The "pointers" represent the combined practical experience of hundreds of servicemen—men who "know how" and who have worked out their problems in a practical "down-to-earth" manner. *It is the only book of its kind published.*

• How many times have you wanted an idea that you could use—to test equipment—something you could build in your own shop; or special shop equipment that would expedite your overhauling and rebuilding work; or special tools to save you time.

• This book has the answer to many of your questions. The book is a compilation of hundreds of suggestions which have appeared in monthly issues of The Refrigeration Service Engineer.

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REFERENCE MANUALS

$1.50

● LIMA CHAPTER, *Lima, Ohio, July 18*—The meeting was held at the Sweeney Engineering Co. and as a part of the educational program films entitled "Checking the System" were shown. A business meeting followed during which a committee was appointed to act as an examining board, and routine business of the chapter completed. The Educational Director continued with a discussion on the subject matter shown in the educational film. The meeting was then adjourned.

● OIL CAPITOL CHAPTER, *Tulsa, Okla., July 17*—A delegate to the National Convention was elected at this meeting, Clyde Copp being chosen as delegate and Jack Walden as alternate. Membership applications for Gordon Miller and Robert L. Jett were read. Twenty-nine members were in attendance.

● ORANGE COUNTY CHAPTER, *Orange County, Calif., May 22*—President Merle gave an explanation on G.I. training program which was followed by a discussion on G.I. training. Three of the members present had received temporary permits to employ veterans. Mr. McCain, Educational Chairman, gave some highlights on future programs and Howard Sipherd suggested the chapter purchase a slide projector. Harry Fox had donated two dehydraters which were raffled off during the meeting. They were won by Bill Wolf and Irwin North. Ice cream, cookies and other refreshments were served following the meeting.

June 19—The meeting was held at The Edison Company Auditorium. Introduction of several visitors was the first order of business. During a discussion of future educational programs H. C. Allen suggested questions on every-day refrigeration problems be discussed at the meetings. He started the ball rolling with a question on a blower evaporator which stopped cooling every twenty-four hours. The question created some interesting discussion. Austin Hicks suggested a Question Box be placed near the door and asked that an expansion valve representative be obtained for the next meeting.

At the July 18th meeting 21 members and 15 guests were present and after a short business session the meeting was turned over to the Educational Chairman, R. L. McCain, who introduced speakers of the evening, A. F. Habener, John Schlemmer, R. C. Allen of Glendale, Calif., and Dray Waugh of Kansas City, Mo., all of whom are connected with General Control Co. A. F. Habener gave a complete explanation of General Control expansion valves, followed by John Schlemmer demonstrating the operations of various type valves with a glass evaporator which was set up for the purpose. Harry Hoskins, Chairman of the Entertainment Committee, conducted a raffle and prizes were won by Howard Sipherd, Pat Riley, Tom Markham and R. L. McCain.

● ROCHESTER CHAPTER, *Rochester, N. Y., July 17*—A motion was made that thanks be forwarded to Rochester Gas & Electric Co., for the ad appearing in the Times Union and other papers congratulating the members and officers on the formation of one of the largest organizations of its kind in the country. The rest of the meeting was devoted to business matters which were satisfactorily completed.

Ladies Auxiliary

● TWIN CITIES AUXILIARY, *Minneapolis, Minn., July 9*—This meeting was held at the residence of Mrs. Ubert Hanson. The ladies brought their donations for the bazaar. Mrs. Mahnke made the suggestion that the Auxiliary have a rummage sale in the fall. There was no further business transacted. Eight ladies were present at the meeting, after which refreshments were served, assisted by Mrs. Asproth.

* * *

PUEBLO, COLORADO, PETITIONS FOR CHARTER

ON JUNE 20th in Pueblo, Colo., a group of servicemen in the area met for the purpose of forming a chapter of the Refrigeration Service Engineers Society. Following the usual routine of such formation meetings, a resolution was passed to the effect that a chapter be formed and petition for charter was signed by 16 of those present. The name selected for the chapter is San Isabel, which is a national forest in the center of the territory covered by the proposed chapter.

Territorial jurisdiction of the chapter is to be counties of Mesa, Delta, Gunnison, Chaffee, Fremont, Teller, El Paso, Otero, Kiowa, Montrose, Saguache, Custer, Pueblo, Crowley, San Miguel, Ouray, Hinsdale, Mineral, Rio Grande, Alamosa, Bent, Huerfano, Prowers, Dolores, San Juan, Montezuma, La Plata, Archuleta, Conejos, Costilla, Las Animas and Baca. Temporary officers elected are Byron M. Drake, president, and Fay D. Hall, secretary-treasurer.

It is expected that a number of men who have been members of Mile High Chapter will transfer to the new chapter inasmuch as it will be a shorter traveling distance for them to attend meetings.

* * *

FUTURE HOME

(Continued from page 35)

pointed out by the house's sponsors is the fact that a standard type refrigerator would interrupt the design of the kitchen because of its height.

Experimental Factor Is Emphasized

Members of the engineering staff of Servel, Inc., and Southern California Gas Co. of Los Angeles, who collaborated in devicing the refrigerator, stress that, in its present stage of development, the unit on display in

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the postwar house is purely experimental and makeshift in character. They have attempted, they announced, to present a refrigerator design that would embody some of the thinking and experimentation—still very much incomplete at this time—which has been devoted during the past several years toward the development of a residential unit refrigerator that would depart from and provide a contrast to the conventional upright, hinged door types.

Refrigerator Is Star Attraction

That they have produced something of nearly revolutionary design is attested by the exclamations of pleased surprise uttered by women visitors to the postwar house when the refrigerator is demonstrated.

The Console Servel is composed of four drawers which are consolidated compactly within an area 2 feet, 8½ inches high, by 5 feet wide. The slightly larger upper drawers have hinged doors which can be drawn downward to a full horizontal position to afford convenient access to the inner-drawer area. A small Servel refrigeration unit is installed on the right side in each of the upper drawers.

Apartment-House Size Units Used

Highlighting the entirely experimental nature of the project is the fact that no special refrigeration units were built for the console model. The two used are of apartment-house Servel size, 12 inches wide by about 15 inches high, which leaves nearly two-thirds of the drawer space for storing food. The two lower drawers pull directly outward by means of handles. They are of the same width but some three inches less in height than the upper drawers. The entire area of the lower drawers is intended for food storage. Dimensionally the postwar house console refrigerator will accommodate approximately the same amount of food as an upright Servel. The drawers are high enough to take the normal size milk cartons and other containers that can be stored in a conventional model.

Suggestions on Refrigerator Welcomed

Policy of the sponsors of the postwar house is to welcome and solicit expressions of opinions on the Servel console refrigerator, especially from women. Thus far few objections have been registered in respect to the basic drawer design, but some criticism has been directed toward the stooping that is involved in opening the drawers. The constructive criticism and suggestions are being assembled and will later be evaluated for possible incorporation in later models when experiments with console drawer refrigerators are carried to a further conclusion.

Another refrigeration unit in the kitchen is a new type frozen food cabinet developed by the Weber Showcase and Fixture Co. of Los Angeles. This cabinet is installed in the northeastern corner of the kitchen and is designed to maintain food at below freezing indefinitely.

The food refrigeration needs of an outdoor barbecue center which is enclosed within a pagoda just outside the kitchen are supplied by a Servel of conventional design which is built into the end of the sink counter. This refrigerator is of the hinged-door type, but its height has been accommodated to make it fit within the height of the counter. It has a 24x26 inch storage compartment plus an ice cube unit.

* * *

BULL SESSION

(Continued from page 31)

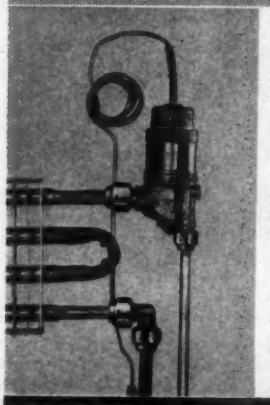
drum of SO_2 in the basement. What more potent weapon could a man ask?

"I drilled a hole through the floor near the front of the building. Then I hooked a piece of ¼" tubing to the sulphur drum and shoved the other end up through the hole in the floor. Now I was ready for action. I had a gas mask in my kit which I put on, then I cracked the valve on the drum. I crawled up the stairs to watch developments. They weren't long in coming. First the boys looked accusingly at each other, and then as the sulphur smell began to get stronger, they went out the back door of that place like the devil was after them. The boys across the street must have seen them go for in a few minutes they came over to investigate. They didn't come in, however, by that time the sulphur fumes were plenty strong in that place. A little later I heard the sound of galloping horses in the distance, so I assumed it was safe to come out.

"I didn't waste any time, but gathered up my tools and legged it for the border. It was only three blocks and I made it in nothing flat. As I came across the line a group of men who had been watching the battle from the tops of some box cars gave me a big cheer. I asked them what was going on and they told me that a troop of Federal soldiers had cornered a gang of bandits in that building and were trying to capture

*STA-TITE

THE REFRIGERATION FLARE NUT which cannot Creep or Work loose



Moisture will work its way along the threads, to fill the space between the fitting and the inside of the flare nut. Confined in this space, the water, in its attempt to freeze during the operating cycle, develops a tremendous pressure—16,400 p.s.i. at 20° F. Something has to give at such high pressures (1) the nut may stretch, (2) the male fitting may collapse, (3) the copper tube flare may extrude any one of which will allow the flare nut to loosen. You know the rest—moisture in the system and/or loss of refrigerant. A condition which has long baffled the refrigeration industry

NOW—Superior engineers have found a positive cure—the new "STA-TITE" Flare Nut. By simply providing relief openings in **otherwise standard flare nuts**, the possibility of pressure being created is entirely eliminated **the flare nut stays tight**

Thousands of "STA-TITE" Flare Nuts already in service have yet to show a single failure Moisture trouble, costly and annoying leaks, because of so-called "creeping" flare nuts, have been eliminated completely

Get "STA-TITE" Flare Nuts from your jobber Use them on **all** connections which are subject to frequent or occasional frosting and defrosting Banish "creeping" and leaks forever!

"STA-TITE" is another Superor contribution to better refrigeration!

*U.S. Patent 2,323,099

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(Continued from page 31)

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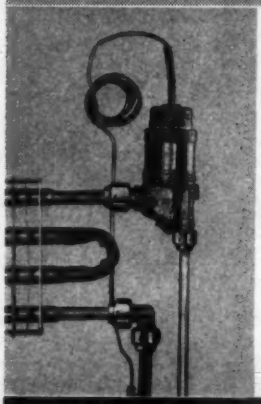

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them. I don't know if they succeeded or not. I never went back to Naco.

"The funny part of the deal was that it almost caused an International Incident! Both sides accused the other of using poison gas. The American press played up the story and there was quite a furor, but no one could account for the poison gas. Some people thought it was a gangster feud and that rum runners had tried to exterminate a rival gang with gas. The townspeople attested to the fact that gas had been used. That some horrible and vile smelling stuff was all over that section of town. The gas was there all right. I got out so fast I didn't stop to close the valve on the sulphur drum. It was a 150-pound drum and I guess it lasted quite a while. I never told anyone the part I played in this incident. That's the whole story, boys, and so help me, every word of it is true."

Well, that broke up the bull session for that day. No one could hope to top Evans.

I imagine the story was based on a true incident, but had gained a lot in the telling. Anyway it's a good yarn, and a man would be a fool to let the truth spoil a good story.

SAFETY IN SERVICE

(Continued from page 27)

4. Thorough training and instruction of all employees.

5. Individual and constructive supervision.

6. Enforcement of safety regulations.

Practically all accidents are due to careless habits that are usually committed many times before an accident occurs. Prompt action by the foreman in correcting and eliminating these unsafe acts is the only way to prevent them from eventually causing accidents. Some known common practices in the service of refrigeration equipment that are bad are as follows:

1. Cleaning machinery without shutting off the power.

2. Use of unsafe or makeshift or improper tools.

3. Overloading tote boxes used for carrying tools.

4. Using improper size or designs of harness in handling domestic refrigerators.

5. Disconnecting or removing guards.

6. Failure to properly dress tools, chisels and concrete drill bits.

7. Neglect of lubrication.

8. Overloading refrigerant drums.

9. Neglecting gas masks.

10. Failure to wear goggles.

11. Improper use of halide leak detectors.

12. Improper methods of setting high pressure controls.

13. Forced defrosting of shell and tube coolers.

14. Blocking high pressure controllers.

15. Failure to recognize the warning given by gauge readings.

16. Incomplete knowledge of refrigerants.

17. Taking relative safety of refrigerants as compared to another too much for granted.

18. Insufficient cribbing and blocking when moving heavy ice boxes and cases.

19. Failing to frequently inspect chain and wire supports used in erection of equipment.

20. Failure to place qualified leadership with crews.

To effectively reduce the careless practices and inefficiencies in his department the foreman should establish his own corrective procedure. The following ten-point plan is suggested as a guide.

1. Make frequent inspections for the sole purpose of checking conditions and habits.

2. Observe individuals and determine if they are deviating from approved methods.

3. Make a written record of dangerous practices observed.

4. Prepare written rules and instructions to correct frequently observed unsafe acts.

5. Call rules and instructions to the attention of all employees.

6. Add rules to instructions for all employees.

7. See that everyone is instructed in his job and fully understands the instructions.

8. Make safety rules a part of job completion methods, not a separate set of instructions.

9. Enforce rules strictly and impartially.

10. Investigate every accident no matter how minor. Determine the unsafe practices involved and take steps to prevent a repetition.

It would be fortunate indeed if all pain and suffering from accidental injuries could be banished by the simple expedient of issuing an order. Unfortunately, accidents cannot be ordered stopped. They must be painstakingly eradicated through the expert application of three principles. Each is basic in itself, and when industrial accident prevention is designed for overall adherence to these principles, the program rests on solid ground and is headed for success. These principles are: 1. Get interest. 2. Get facts. 3. Get action.

Arlington SHAFT SEALS

3 Exclusive Features

FLAT SEAL FACES

— Uniform — flat — smooth — seal faces.

POSITIVE FLEXIBILITY

A diaphragm acting synthetic rubber ring. No sliding fit between a rubber part and shaft or sleeve.

HIGH GRADE MATERIALS

High grade steel and bronze of known wearing quality are used for the seal faces.

Ask your jobber about the

Arlington SHAFT SEAL

MODERN DESIGN PRODUCTS CO.

3944 W. LAKE ST. • CHICAGO 24, ILLINOIS

REPLACEMENT CAPACITORS *that keep 'em running*

Ask your local Aerovox distributor for latest catalog that tells you how. Or write us direct.

AEROVOX capacitors

FOR RADIO-ELECTRONIC AND INDUSTRIAL APPLICATIONS

AEROVOX CORP., NEW BEDFORD, MASS., U. S. A.
Export: 13 E.40th St., New York 16, N.Y. • Cable: 'ARLAB'
In Canada: AEROVOX CANADA LTD., Hamilton, Ont.

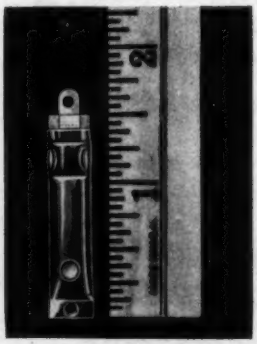
New and Improved Appliances

Information contained in this department is furnished by the manufacturer of the article described and is not to be construed as the opinion of the Editor.

Mighty Mite

NEWEST of the miniature thermostats to hit the electrical field is "MIGHTY MITE," a perfected sealed thermostat, especially designed for use in installations where dust, vibration, or moisture create operating problems for thermostatic controls.

Built to withstand the toughest kind of treatment without changing its temperature setting, the "Mighty Mite" is pre-set to the customer's temperature specifications, has ⅛-inch silver contacts, and is custom-engineered to give extra safety and heat control accuracy. The standard model is pre-set for fixed temperatures up to 300 degrees. Other models are available for settings up to 600 degrees.



Being exceptionally small, thin, durable and lightweight, this thermostat has wide applications in the electrical field. Food warmers, percolators and other appliances, as well as electric motors, air conditioning, refrigeration and heating systems will use this sealed thermostat as an operating or safety control.

"Mighty Mite" not only is tamperproof, but dust and waterproof. It can even be molded in rubber and various plastics. The copper jacket has high thermal conductivity which makes the thermostat highly responsive to temperature. By the use of fibreglas insulation, neither humidity nor freezing weather can affect its consistent operation. The sealed tubular construction withstands great external pressure, and will neither bend nor break in contrast to thermostats using stamped or assembled cases. The standard model shown is designed for use up to 300 watts, 110 volts, or 150 watts, 220 volts a-c non-inductive load.

One of "Mighty Mite's" biggest construction features is the over-size contact points. These are big ⅛-inch cold-headed, spun-in silver contacts, which result very noticeably in a slower let-down of temperature change and which easily triples its life.

Cold-Run Resin Glue

A NEW cold-run, fast-setting resin wood glue, "Wood-Lok," has been developed for joint assembly operations by National Adhesives, New York, N. Y.

Wood-Lok is the only type of resin glue that can be handled and machined after 20 to 30 minutes' clamping time, instead of the usual six to eight hours. Exhaustive tests in National's laboratories and two years' use and study in a wide variety of wood-working applications in the field, show it produces a strong, resilient bond unaffected by humidity changes.

A war-time "Resyn" development now made available to all wood-working industries, Wood-Lok has many outstanding points, according to National's announcement:

It is cold-run; therefore, its bonding quality is never weakened by constant heating. It is a liquid, ready for use. Nothing has to be added, soaked or heated. It does not harden in the pot. Its characteristics never change during shipment, application or use. Its storage and working life is months, not three to four hours. Wood-Lok has no odor. It eliminates "chilled" joints; there is no need to heat the glue or wood, or to heat the room above a comfortable working temperature. It never embrittles nor forms a rock-hard abrasive film to dull saws and knives.

Refrigerator

A 2 FOOT refrigerated unit which gives the druggist four and one-third cubic feet of additional space for cold foods or biologicals is manufactured by The Liquid Carbonic Corporation.

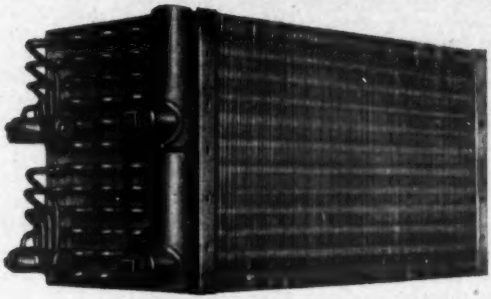
The 2' refrigerated unit above designed for under-counter or backbar installation, gives the druggist additional space for cold foods or biologicals.

The unit is stainless steel inside and out, refrigerated by direct expansion and insulated by pure corkboard. Designed for under-counter installation, it has a 33 inch high work surface. Finger tip door latch and recessed base make it easy to get at.

Four and six-foot models of similar design, which meet demands for added refrigerated storage space, are designed for under-counter or backbar installation. Capacities are 10 and 16 feet respectively.

FIN COILS

Rempe



Coil shown: Integral liquid header. Finger-feeds to circuits. Common suction header for return of refrigerant gas.

For all types of commercial or industrial low temperature installations. To your specifications. Sizes to 16 ft. lengths.

Copper tube with aluminum fins, or all steel, hot galvanized. Use with any refrigerant, or liquid cooling medium. All coils tested to 400 lbs., and dehydrated before shipment.

Send B/P or details for prompt quotation. Ask for new Rempe Catalog.

REMPE COMPANY
358 No. Sacramento Blvd., Chicago 12, Ill.

HOME-PROVEN BY THOUSANDS
Many QUICFREZ Farm Locker Plants have already been in use for over 6 years.
Quicfrez is built to last
SANITARY REFRIGERATOR CO.
Fond du Lac, Wisconsin
SANITARY Quicfrez

G.E. NAMES FOUR TO NEW POSTS

John P. Turner, Jr., until now Manager of the Central Sales District for the General Electric Company's Air Conditioning Department with offices in Kansas City, has been named to the newly created post of Field Sales Manager for that same department of G. E., according to J. P. McIlhenny, Manager of Sales, who also announced the appointment of three other Air Conditioning Department men to new positions.

Mr. Turner, who will be located at the Air Conditioning Department headquarters at Bloomfield, N. J., has been associated with the General Electric Company for the past twelve years and shortly after his return from active duty with the U.S. Navy early this year was named District Manager of the Central Sales District, a position he has held until his new appointment.

Durbin Succeeds Turner

Succeeding Mr. Turner as District Manager of the Central Sales District will be S. A. Durbin. Mr. Durbin, until now in charge of distributor and contractor sales in the Air Conditioning Department, has been associated with the General Electric Company since 1929 when he enrolled in the Test Course for Student Engineers at Schenectady following his graduation from the University of Notre Dame in that same year.

The announcement also named William G. Cox, until now in charge of the Manufacturer Section of the Air Conditioning Department's Industrial, Marine and Contractor Division, to succeed Mr. Durbin in that Division. Mr. Cox, a native of Winnipeg, Canada and a graduate of the California Institute of Technology in the class of 1935, has served in application, product, and sales engineering capacities since he became associated with General Electric in 1936.

Maseritz Succeeds Cox

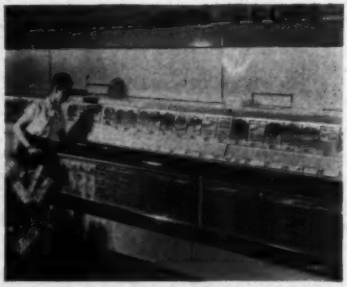
Bernard D. Maseritz, who until now has served as Sales Representative in the East Central District, Cleveland, has been named to Mr. Cox's former position and will make his headquarters at Bloomfield. Mr. Maseritz has long been associated with commercial refrigeration, both in sales and installation work and has served as Assistant Commercial Manager and acting Manager of the General Electric Supply Corporation as well as District Sales Representative prior to this present appointment.

HILL FROSTED FOOD CASE

TO MEET the increasing demand from retailers who require a self-service, large capacity frosted food case, C. V. Hill & Co., Inc., Trenton, N. J., has developed a new model. The more important features of this case are:

Automatic defrosting. Cabinet defrosts itself automatically at regular intervals without manual attention. Eliminates frequent scraping frost from coils and unloading and loading contents.

Add-a-unit construction. Permits a continuous display of merchandise of almost any length by placing individual units together thus eliminating usual in-between ends.



THE HILL FROSTED FOOD CASE

Uniform temperatures. Maintained by cold air curtain thrown across service opening thus keeping temperatures uniform at top as well as bottom of case.

Dual illumination. Display section and picture board area are illuminated by separate sets of concealed lights.

Besides these special features this case has open top for self-service and window display front. Individual case measures 7'-8" in length and has a capacity of approximately 700 packages.

WESTINGHOUSE MOTOR PRODUCTION

WESTINGHOUSE Electric Corporation's production of small motors—the power plants for home appliances, machine tools and consumer appartus—stands today at 33 per cent above the 1941 peacetime peak and is expected to further increase until February, 1947, when the maximum production from present facilities will be reached, C. C. Shutt, division manager, Lima, Ohio, announced.

STOP

PAT. PENDING

TERMINAL LEAKS COMPLETE KIT

(3 Terminals)

$5.50

Lower Prices In Quantity

Please Mention Jobber's Name

Coldspot Couplings and Dome Gaskets. Immediate Delivery. 25 cents each in lots of 10

WAGNER REPLACEMENT TERMINALS

A research development designed to repair terminal leaks on sealed units, instantly and permanently on the job—

IN 5 MINUTES

No special tools or equipment required. Now available for Crosley F 12. Soon available for Frigidaire, Westinghouse, Norge, Kelvinator, and TECUMSEH (Chieftain) UNITS.

Territories Open to Manufacturers Representatives

KINGS COUNTY REFRIGERATION CO.
1257 Flatbush Ave., Brooklyn 26, N. Y.

Firm .....

Address .....

Jobber .....

Send Check or Money Order
We Will Ship Prepaid

No. of Complete Kits..... No. of Couplings.....

No. of Dome Gaskets..... ☐ C.O.D. ☐ Pre-Paid

NOW!

FORGED FLARE NUTS AND FITTINGS

Ask your jobber for Details

Electrimatic

2100 INDIANA AVE CHICAGO 16 ILLINOIS

Above: J. G. Praetz explaining Red Diamond ice cream cabinet split circuit refrigeration to men attending Liquid Chicago Service School.

Right: Servicemen studying the various valves and refrigeration controls used on Liquid fountains at the recent Chicago Service School.

FOUNTAIN SERVICE SCHOOL

THE service school for soda fountain and carbonator servicemen was held in June at The Liquid Carbonic Corporation's main plant, 3100 South Kedzie Avenue, Chicago. The school was conducted by Glenn Pence, Northwestern fountain-cabinet field service supervisor, assisted by other specialists in refrigeration service and repair.

The first meeting on Wednesday, June 12, was devoted to the theory and problems of carbonation and installation procedure. On the following days the men went to the repair department where they did actual repair work on all models of carbonators. Personal supervision was given by Liquid experts.

A three hour evening talk and slide presentation covering operation and service on soda fountains and ice cream cabinets was given by J. G. Praetz, F-C division, General Service Manager, on Thursday, June 13.

Glass Circuit Used

A complete special display of equipment, control devices, and split-circuit glass evaporator was set up in the show room for this meeting. Over fifty service engineers and service organization representatives attended the meeting.

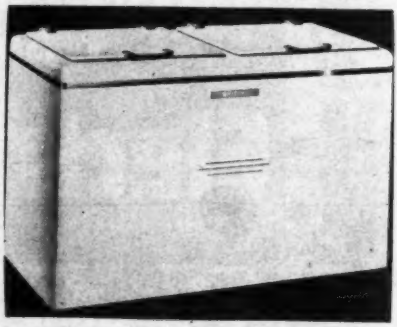
On Friday a conducted tour through the plant gave the men attending the school an opportunity to see the fabrication of stainless steel coils, carbonator assembly and other processes connected with the manufacture of fountain and refrigeration units.

WHITING CORPORATION TO MANUFACTURE HOME FREEZERS

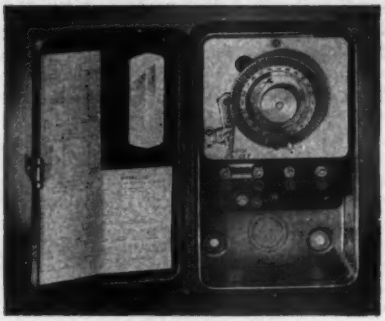
STEVENS H. HAMMOND, President of the Whiting Corporation, Harvey, Illinois, manufacturers of electric cranes, hoists, evaporators, filters, and foundry equipment, announces the creation of a new Refrigeration Division to manufacture and market home-type freezing units and other refrigeration products.

H. R. ROBERTS

Two new Whiting Home Freezers, a 4½ cu. ft. and an 11 cu. ft. model, will appear



Whiting Model F-2000 Home Freezer.



The "TOP" VALUE in Time Switches

Here's a top-quality, service-proved ON and OFF time switch. Precision built rugged and durable with a great performance record. Highly successful for controlling motors, valves, pumps, blowers, oil burners, stokers, attic fans, commercial lights, etc.

A leader when first introduced over ten years ago, now includes many improvements, one of them being telechron motored. Increased volume and war-learned manufacturing efficiency have brought price down to $10.75 list. Write for complete bulletin

Paragon 300 SERIES Now $10.75 List

Telechron MOTORED

PARAGON ELECTRIC COMPANY

1636 Twelfth St. • Two Rivers, Wis.

Paragon Two Rivers WISCONSIN

MAKERS OF ELECTRICAL EQUIPMENT SINCE 1906

YES, the refrigeration service business is great today. Everything looks rosy. Plenty of work—nice profits, too. But suppose you come down out of the clouds and consider the future. Look ahead to the time when there may be more men than jobs—and when service work will go to the men best qualified to handle it—not just any "handy man." Think that over and you'll understand why

U. E. I. BALANCED TRAINING

(home-study instruction *balanced* with actual shop practice) in refrigeration and air conditioning is increasingly popular, not only with future-minded men young in refrigeration, but with smart "old timers." They are "sitting pretty" today, too, but they have their eyes on the future opportunities and want to be ready for them.

Their choice is U.E.I. because they know it is a school with more than 19 years of experience in training men for refrigeration and air conditioning. They know there is nothing experimental—nothing unproved—nothing new-fangled or untested about Balanced Training. It works.

First step toward making certain you'll be sitting pretty in the future is to mail this coupon—NOW.

MAIL THIS COUPON TODAY

FREE FACTS

UTILITIES Engineering Institute

1314 W. Belden Ave.
Dept. 45, Chicago 14, Ill.

Please give me more information about Refrigeration and Air Conditioning Training, as promised in your Refrigeration Service Engineer September, 1946 ad.

Name .....

Address .....

City..... Zone..... State.....

in Whiting dealer showrooms early in August. Model F-1000, to retail at an O.P.A. approved price of $239.50, has a capacity of approximately 175 lbs., contains 1/6 h.p. sealed unit, is insulated with 4"-5" Fiberglass to maintain a constant temperature of 0° F.

Model F-2000, a more spacious 11 cu. ft. model, retailing at an O.P.A. price of $379.50, has a capacity of 475 lbs., is powered by a 1/5 h.p. sealed unit, heavily insulated with Fiberglass, maintains a temperature of 0 degrees Fahrenheit.

The new Refrigeration Division is under the direction of Howard R. Roberts, Whiting Vice-President, and an early pioneer in the development and marketing of home-type freezing units. Mr. Roberts for a number of years was general sales manager of the Deepfreeze Division of Motor Products Co., North Chicago, Illinois.

NEW HERMETIC REFRIGERATION COMPRESSOR

JACK & Heintz Precision Industries, Inc., enters the electric refrigeration industry with a new hermetic compressor no larger than a quart milk bottle and weighing approximately one third of the present-day conventional models. The new unit, which has been undergoing laboratory tests, has been developed under the direction of Ralph M. Heintz, vice president in charge of engineering.

Experimental installations in household refrigerators have indicated many desirable advantages, particularly compact simple installation. The small size and lightness in weight has been accomplished without sacrificing efficiency, reliability, or endurance life of the unit.

Smaller Than a Milk Bottle. A new hermetically sealed refrigeration compressor for household refrigerators and many commercial applications.

Development is now nearing completion on units of 1/8-1/6 hp., covering practically the entire household refrigerator field. Other models are being developed in the laboratory for many commercial applications, such as water coolers, beverage coolers, home freezers, room coolers, ice cream cabinets, etc.

Life tests are being run and engineering releases on the unit are practically completed. Production is planned to get under way before the first of the year, depending on the availability of materials.

MALCOM NAMED V.P. OF CHRYSLER

APPOINTMENT of H. A. Malcom, General Sales Manager, as a Vice President of Airtemp Division of Chrysler Corporation is announced by D. W. Russell, President. Mr. Malcom now will have the joint title of Vice President and General Sales Manager.

H. A. MALCOM

Mr. Malcom joined Chrysler Airtemp in 1941 with a fine background of appliance, automobile and other specialty selling experience, having served as both salesman and sales executive. For two years he was Regional Sales Supervisor in charge of the entire southern half of the United States.

In 1943, he was promoted to the executive post of Assistant to the Sales Vice President. In this capacity, he coordinated the activities of all factory sales executives in the field.

He was again promoted in 1944, when he was appointed Assistant General Sales Manager of this home heating, air conditioning and commercial and industrial refrigeration division of Chrysler Corporation. In 1945, he rose to the position of General Sales Manager.

Mr. Malcom will continue to make his home in Dayton, where Chrysler Airtemp is headquartered.

save hours of CALCULATIONS!

*published for the 1st time IN THE INDUSTRY

With the Rapid Selection Tables in this new Kramer book you can ascertain the BTU Load and required evaporator size as easily as you can find a number in the phone book. These tables include 1440 individual calculations covering freezers from 5' x 4' to 25' x 25', over a temperature range of from +10° F. to −20° F. under various loadings and applications.

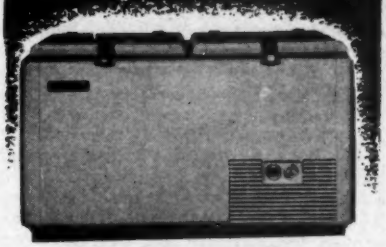
The book also includes a complete explanation of the theory, operation and application of the Thermobank System in addition to a wealth of other low temperature information and data useful to refrigeration engineers, servicemen and salesmen.

Send for Bulletin 16RS

3

HEAT TRANSFER EQUIPMENT KRAMER TRENTON Co.
TRENTON N. J. NEW JERSEY

LOOMING BIG IN THE MODERN AMERICAN LIVING SCENE . . .



. . The BEN-HUR *Farm & Home Freezer*

Engineered and designed to bring the health-building benefits of fresh-frozen foods to the rank and file of better-living conscious Americans. Hundreds of thousands of new homes now planned and building are present prospects for a generous-size, dependable, quality-built BEN-HUR Farm and Home Freezer.

Service-wise dealers, anticipating increased customer good-will and confidence will feature and recommend the new "BEN-HUR" for these "Stand-Out" Quality Features.

★ ALL STEEL CONSTRUCTION
★ LIFETIME TESTED
★ ALL FOOD SURROUNDED BY COLD
★ A SIZE FOR EVERY FAMILY
★ THICK INSULATION (Hermetically Sealed)
★ MODERN, SMART DESIGN
★ ECONOMY-ENGINEERED

BEN-HUR MFG. CO.

Continuous Manufacturing Since 1911
634 E. Keefe Ave. Milwaukee 12, Wis.

BEN-HUR FARM & HOME FREEZERS

G.E. STRESSES SERVICE

A NATIONWIDE series of four new General Electric product service meetings was conducted recently for distributor service managers and other key service personnel, according to W. C. Noll, manager of the technical and educational sections of the Company's Product Service Division.

Sessions given over to a comprehensive breakdown of problems concerning the servicing of all G-E major appliances took place in Atlanta, Bridgeport, Kansas City and San Francisco. Total attendance at the schools topped 200 with every General Electric major appliance distributor being represented.

The material presented to these distributor service managers will enable them to carry factory information direct to all dealer service groups throughout the country.

Actual products, some of which were initial production line samples, were used in all the presentations. Included were General Electric's brand new automatic dishwasher, home freezer and line of storage cabinets. Also used in the presentations were many charts, special cutaway mechanisms and sample parts.

Each meeting lasted five days, with the first four days taken up with detailed discussions of the products themselves, with suggestions for meeting current service problems and with explanation of the design and recommended service procedures for all new products that will be in the field within the next six months.

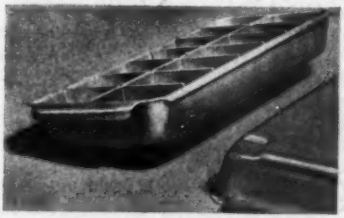
"How to do a more effective servicing job" was the general topic for the fifth day of school. The value of a competent service organization was emphasized and the need for merchandising the services of product service groups was discussed in detail.

Good Service an Asset

Distributors and their representatives were informed that a good service organization is an asset to the sales department because it permits salesmen to devote their full time to selling products, it leads to new sales prospects through service men's reports and it promotes a favorable brand-consciousness among appliance owners by keeping equipment in perfect operating condition. In short, the service man is one of the most valuable sources of new prospects because he visits the homes and knows his customers' needs.

10 DAY SERVICE
Factory Rebuilt Units $39.95
(ALL MODELS EXCEPT "C")
Genuine Grunow Parts.
Guaranteed 6 months.
Just unfasten bolts holding board and ship complete.
GRUNOW
AUTHORIZED SERVICE, INC.
4313 W. Fullerton Ave., Chicago 39, Ill.

FOR SALE—10,000
NEW ALUMINUM ICE CUBE TRAYS IN 3 POPULAR SIZES



Also air-cooled and water-cooled re-manufactured condensing units in sizes from ¼ to 2 H.P.

Write for Particulars

EDISON COOLING CORP.
310 E. 149th St. New York 51, N. Y.

OUR *NEW* CATALOG!

Send for your copy of this Big, New Catalog of Refrigeration and Air Conditioning supplies. Just off the press! Reserved exclusively for the Wholesale Trade. Include proper identification with your request.

CHASE
REFRIGERATION SUPPLY CO.
546 W. 119th St. ★ Chicago 28, Ill.

SPECIAL WAXES
FORMULA $C_{48}H_{98}$

AVAILABLE IMMEDIATELY IN A VARIETY OF COLORS AND MELTING POINTS FOR

- WATER-PROOFING
- FROZEN FOOD PACKAGING
- MULTI-WALL BAGS
- FOOD LOCKER PAPER
- PROTECTIVE COATINGS
- VAT AND TANK LININGS
- LINERS FOR CLOSURES
- RUST PREVENTATIVES

Composition of Hovey SPECIAL WAXES may be expressed approximately by the formula C_{48} H_{98} . . . Hydrocarbons of the saturated aliphatic series.

ODORLESS

TASTELESS

CHEMICALLY INERT

HIGH MOISTURE VAPOR RESISTANCE

EXCELLENT ELECTRICAL CHARACTERISTICS

EXCELLENT HEAT SEALING PROPERTIES

We manufacture and compound Hovey SPECIAL WAXES and paraffins to your specifications and requirements. Your special problems scientifically solved by our laboratory technicians. Write, phone or wire.

HOVEY PETROLEUM COMPANY
SECOND NATIONAL BANK BUILDING, HOUSTON 2, TEXAS

Climaxing each meeting was the distribution of a complete "service training book" for use by distributors in conducting service schools for dealers. The book presents under one cover all information on General Electric's large and complete appliance service training library and gives detailed school outlines on all G-E appliances, from the earliest models up to those which will be on the market within the next half year.

According to C. E. Ring, supervisor of the field service section of the Product Service Division, General Electric feels fortunate in having experienced and well organized distributor service organizations in the field today.

S S S

C.T.I. MOVES TO NEW BUILDING

THE Commercial Trades Institute announces a new location for its school of refrigeration and air conditioning at 1400 West Greenleaf Avenue, Chicago. Formerly located at 209 West Jackson Boulevard, the Institute was forced to find larger quarters because of the increased demands for its training by veterans and others.

The new school, a four story building containing 40,000 square feet of floor space, is located in one of Chicago's finest residential districts only a short distance from the lake front.

Commercial Trades Institute is known as the civilian school equipped to train Army men in refrigeration during the war. Its increased facilities will work to the distinct advantage of both trainees and ultimate employers.

S S S

ERLE ZOLL HEADS CHICAGO-WILCOX

CHICAGO-WILCOX Manufacturing Co., Chicago manufacturers of gaskets, announces the appointment of Erle J. Zoll as president of the 40-year old organization.

Mr. Zoll has been associated with Chicago-Wilcox for the past twenty-nine years handling sales. In this capacity he is well known throughout the plumbing and heating, refrigeration, power and oil industries. In addition to his new duties as president, he will continue to be in charge of sales for the company.

Other officers of the corporation include R. B. Anthony, chairman of the board; H. B. O'Brien, secretary; and R. B. Anthony, Jr., treasurer.

REPAIR AND SERVICE REFRIGERATORS
• WIRING, COPPER TUBING, ELECTRODES, ETC.

with

IDEAL "THERMO GRIP"
Electric
SOLDERING TOOLS

More and more refrigerator service men are turning to "Thermo-Grips" for all of their soldering work, because "Thermo-Grips" are so easy to use and do a better job—faster!

"Thermo-Grips" are more than just ordinary soldering irons—they are handy electrical soldering tools designed to handle hard and soft soldering—sweating and unsweating threadless copper pipe and fittings, soldering terminals, lugs, etc.

Safe—no pre-heating or open flame hazard. The part touched heats almost instantly. Heat

is concentrated on the spot to be soldered—no danger to nearby parts, walls or partitions.

Ask your Jobber about a demonstration—today!

Distributed Through
AMERICA'S LEADING WHOLESALERS

PROMPT DELIVERY

1939

IDEAL
IDEAL INDUSTRIES, Inc. (Successor to Ideal Commutator Dresser Co.)
1099 PARK AVENUE SYCAMORE, ILLINOIS

LEAKS?

Find them with

VISOLEAK

VISOLEAK detects even the smallest leaks before they cause damage to expensive refrigeration systems. Years of use prove it safe, economical, easy to use.

NEW CHARGING SET

The VISOLEAK Charging Set was developed to inject VISOLEAK, add refrigerant oil, or recharge sealed units. For use on all types of refrigeration systems without danger of introducing air or foreign matter.

Charging Set—complete with hoses. **$7.50**
Filler only—without hoses..... **6.00**

WHOLESALE PRICES		CASE LOTS
4 ounce bottle.	$ 1.00	48 bottles
8 ounce bottle.	1.75	24 bottles
1 pint bottle...	3.00	24 bottles
1 quart bottle.	5.00	12 bottles
1 gallon can...	16.00	6 cans

SAVE 10% ON CASE LOTS

See your refrigeration supply jobber or write for complete information.

WESTERN THERMAL EQUIPMENT COMPANY

1781 West Slauson Avenue — Los Angeles 44, Calif.

SERVICE MEN: Don't Bother to Reface Frigidaire L/S Floats

USE ACME REPLACEMENT SEATS

see or write—
Brass & Copper Sales Co. St. Louis
J. B. Thomas Co. Nashville
A. E. Borden Boston

WHEN YOUR CALLS FOR SERVICE ARE

on Meter-Misers the owner depends on you to have the refrigerant

Don't be stopped from servicing Meter-Misers for lack of the refrigerant. The highly successful use of a replacement refrigerant will enable you to service Meter-Misers at a profit. Use . . .

HERVEEN

the IDEAL REPLACEMENT GAS

Your responsibility to your customers ranks high on the list of necessities for good health. Your success depends on how well you carry out that responsibility to—not one but all those who call on you for service. Get your supply of HERVEEN and be prepared for future calls.

See your jobber or write direct to

MODERN GAS CO., Inc.
Manufacturers & Refiners
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HENRY VALVE APPOINTMENT

HENRY VALVE COMPANY announces the appointment of Mr. Edward A. Flesh as field engineer in the eastern territory. He will have headquarters at 7230 Limekiln Pike, Philadelphia 38, Pa., Phone Hancock 2987, and will cover Eastern Pennsylvania, New Jersey, Delaware, Maryland and Virginia.

Mr. Flesh is well known to the refrigeration trade, having spent many years with Merchant & Evans and Mueller Brass Company.

BRINK WITH JENNINGS REFRIGERATION

L. K. (LARRY) BRINK, formerly secretary-manager of the Los Angeles Refrigeration Contractors Association and an active participant in the formation of the National Association of Refrigeration Contractors, has been appointed general manager of Jennings Refrigeration Co., Los Angeles.

Mr. Brink is widely known in Pacific Coast refrigeration circles and has been engaged in the refrigeration contracting business for the past twenty years.

The new, modern $125,000 structure of the company at 2900 East Olympic Blvd., is nearing completion and will be occupied by September first. The building is 1½ stories of reinforced steel and concrete, is 75x130 and was especially designed and constructed for the display and sale of refrigeration equipment with ample storage facilities for merchandise, parts stock room, shop service department and garages for service and installation trucks.

The Jennings organization is an Authorized Frigidaire Dealer and does a complete contracting and service business in both ammonia and "Freon" refrigeration equipment.

BAARS WITH MILWAUKEE SCHOOL

PRESIDENT Oscar Werwath of the Milwaukee School of Engineering announces the appointment of Ernest S. H. Baars to the faculty as an instructor in refrigeration and air conditioning theory. Mr. Baars is one of the country's outstanding authorities in this field.

Mr. Baars was born in Germany and attended the Technikum Mittweida at Saxony where he received a degree in mechanical

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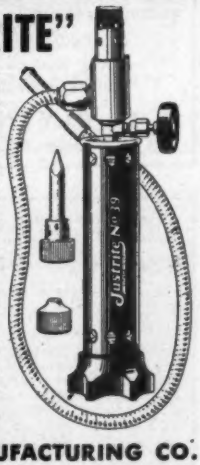

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and electrical engineering in 1901. He also attended the University of Munich where he took post-graduate work before coming to the United States.

After arriving in the United States, Mr. Baars was employed by the Vilter Manufacturing Company of Milwaukee where he held various positions as Draftsman, Sales Engineer and Research Engineer. In 1936 he attended Marquette University for a brief period taking further courses in post-graduate study.

Before coming to the Milwaukee School of Engineering, Mr. Baars held the position of Sales and Development Engineer of the Vilter Manufacturing Company.

BEN-HUR FREEZER MANUAL

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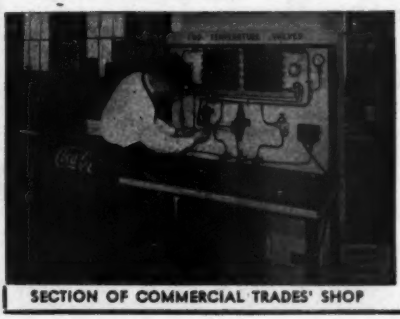

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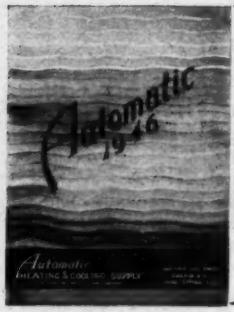

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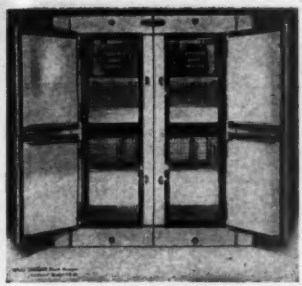

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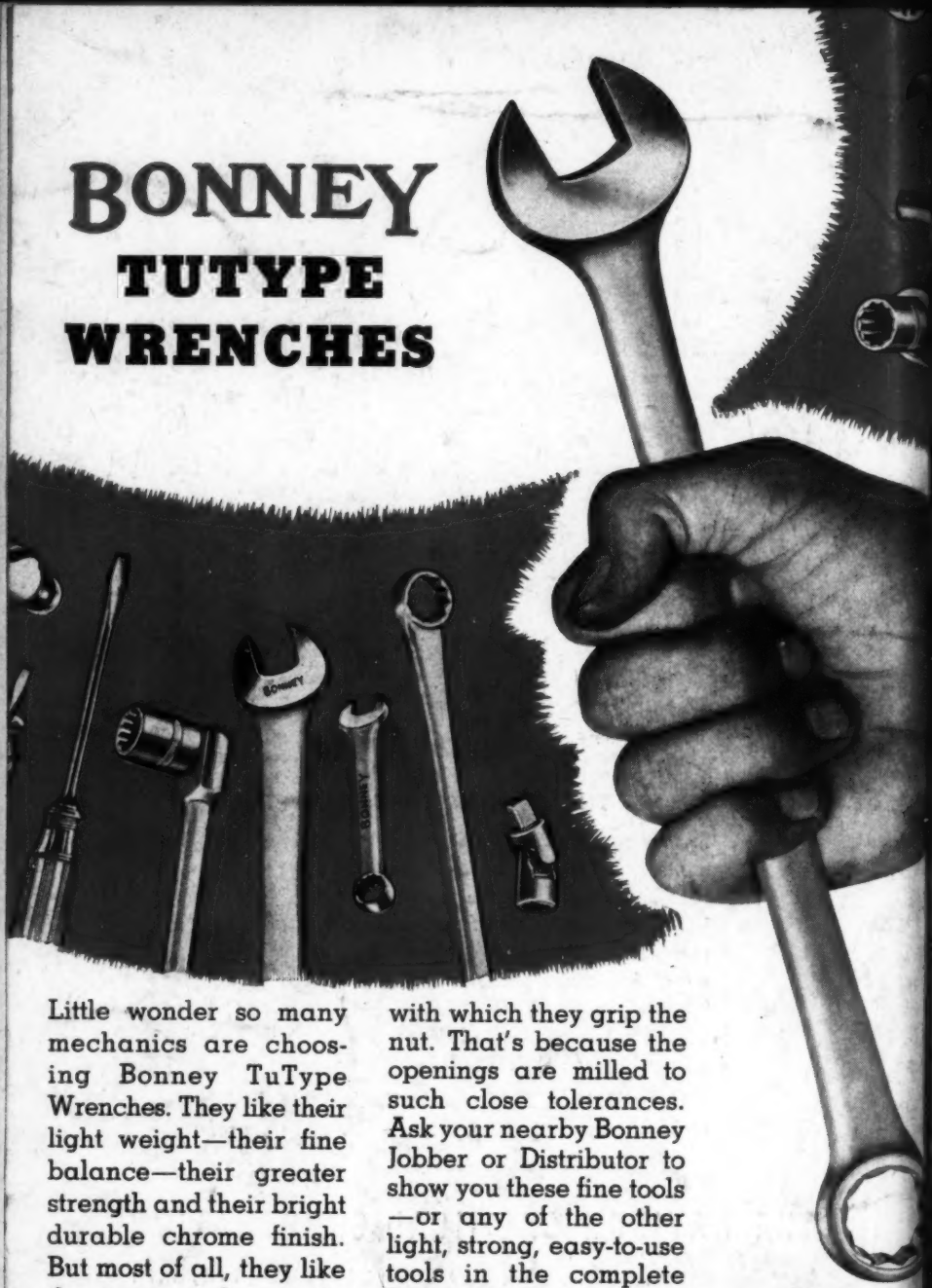

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